

AIR CONDITIONING & REFRIGERATION

the Industry

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Ins & Dope

By GEORGE
F. TAUBENECK



Learn to live and laugh —
thus delay your epitaph

Stories of the Week
New Use for Freezers
Checkup for Citizens
Interruptions
Picture of the Week
Gags of the Week

Stories of the Week

Nagged to desperation by his wife, Joe Horseplayer promised her he'd quit betting on the nags.

Not aware of this tongue-in-cheek pledge, a buddy spilled the beans in front of Joe's wife.

"How did you make out with your old favorite, Sweet Sue, today?"

Thereupon Mrs. Horseplayer gave her husband fits for gambling again.

Sensing the situation the buddy tried to cover up fast.

"Mrs. Joe," he interjected, "you got it wrong. Sweet Sue isn't a horse. She's a waitress at the Elite hotel."

"From what nation do these sailors come?" probed St. Peter.

"The United States of America."

"Let 'em in," sighed St. Peter. "They'll be asking for a transfer in six months anyway."

Congressmen of opposing parties met in face-to-face debate in a Vermont Town Hall.

Chairman of the meeting arose and introduced:

"I give you a man who is loyal, patriotic, intelligent, sincere, honest as the day is long. He understands the problems of our great state and community.

Pause. . .

"Which of you polecats wants to talk first?"

Bull-headed Bruno finally bought a TV set.

Now everyone in his family is an opera lover:

He, grand; his wife, soap; his kid, horse.

"My husband doesn't smoke, drink, or gamble."

"You don't say. Does he make his own dresses?"

New Use for Freezers

Many dealers apparently don't realize that the freezer has useful applications in the commercial and industrial field. Here's a relatively new one we heard about this week.

Automobile batteries gradually lose power when not in use. That is a big problem to dealers, gas stations, and other places which stock batteries for sale to the public.

(Concluded on Page 8, Col. 1)

R. H. Jones Assumes B-W Air Brake Duties as New G-E May Buy Brunner Division Chief In Diversification

BLOOMFIELD, N. J. — Following an intensive personal survey of many distributors in the field R. H. Jones has assumed his newly-appointed responsibilities as general manager of the Air Conditioning Div. of General Electric, it was announced recently.



The division includes three (Concluded on Page 2, Col. 5)

ELYRIA, Ohio — Officials of Bendix-Westinghouse Automotive Air Brake Co. disclosed recently that the firm has been developing and testing products here for the refrigeration and air conditioning components market and that it has been conferring, regarding possible acquisition, with several companies in the field, including Brunner Mfg. Co.

The Bendix-Westinghouse management, for some time, has been considering product diversification as a means of strengthening its operations, according to a joint statement by D. O. Thomas, president; D. S. Kimball, vice president and general manager; and F. G. Reiter, treasurer.

"With our background in the pneumatic systems for automo-

(Concluded on Page 37, Col. 3)

Bush Stockholders To Eye Merger

WEST HARTFORD, Conn. — A special stockholders' meeting of Bush Mfg. Co., to be held June 26, has been announced by Cecil Boling, president.

The meeting has been called to consider and act upon the proposed consolidation of Bush with C. A. Dunham Co.

The plan, which has been unanimously recommended by the directors of both companies, calls for formation of a new Connecticut corporation to be known as Dunham-Bush, Inc.

In a letter accompanying the notice, Boling pointed out that Bush management has given considerable study to possible

(Concluded on Page 18, Col. 4)

Consolidated American To Buy Ace Cabinet

NEW BEDFORD, Mass. — Ace Cabinet Corp. has agreed to sell its total outstanding stock for cash to Consolidated American Industries, Inc. of Delaware, according to an announcement made at a special stockholders meeting of the latter corporation.

The newly elected president of Ace Cabinet is Saul Levine. Edward I. Stern and James Sylvia will continue with the company as vice president in charge of sales, and assistant treasurer (Concluded on Back Page, Col. 1)

Governair To Double Production Capacity

OKLAHOMA CITY — Work has started here on a new Governair Corp. plant which will double present manufacturing capacity, reports W. A. Quinn, president of Governair.

Current production primarily involves the production of 10-ton and larger packaged air conditioners and components.

Home Furnishings Marts To Open June 18

CHICAGO — Preparations are being completed for the opening of the summer home furnishings markets which will be held June 18-29 at The Merchandise Mart and the American Furniture Mart.

The American Furniture Mart recently urged buyers planning to attend its market to write for admittance passes and make hotel and transportation plans immediately, if they have not already done so.

In another announcement, W. O. Ollman, general manager of The Merchandise Mart, listed (Concluded on Back Page, Col. 1)

NAHB Final Report Furnishes New Data on Austin Village

WASHINGTON, D. C. — The long awaited final report on the Austin, Texas air conditioned village project was published recently by the Research Institute of the National Association of Home Builders here.

Despite all that has been said and written about the project in the past 18 months, the 24-page report contains much that is new and previously unpublished. Much of the information released previously is presented here in different form.

Only the data on the effects of air conditioning on the living habits of the 22 families

dwelling in the experimental village and the findings on sound control appear in the final report exactly as previously published by the NEWS.

The report summarizes the findings of a year's intensive research to get basic data on residential air conditioning and presents the results as guidance for home builders.

Here are some highlights of particular interest to the air conditioning industry:

• Temperature variations less than 4° F. between maxi-

(Due to the length of this report the NEWS is running its coverage of the highlights in two instalments, the first of which is presented here. The second portion will appear in a subsequent issue.)

ASHAE To Discuss Home Cooling

NEW YORK CITY — A residential air conditioning symposium conducted by a panel of men possessing special knowledge and experience in their respective fields will be one of the features of the semiannual meeting 1956 of the American Society of Heating and Air-Conditioning Engineers.

The meeting will be held June 18, 19, 20, in The Shoreham, Washington, D. C., according to Walter A. Grant, chairman of the Program and Papers Com-

(Concluded on Page 5, Col. 1)

American Motors To Sell All Ranco Holdings Soon

COLUMBUS, Ohio — American Motors Corp. plans to sell its holdings in Ranco, Inc. to the public soon, thus giving up all financial interest in the control manufacturing firm, it was reported here recently and confirmed in Detroit.

A registration statement covering the proposed offering has been filed with the Securities Exchange Commission.

The public offering of American Motors' 216,950 shares of Ranco common stock is ex-

(Concluded on Page 37, Col. 1)

mum and minimum temperatures measured at the 3-in. and 60-in. levels above the floor throughout the living area were not noticeable to the occupants.

• Low mean radiant temperature in itself cannot produce comfort due to the inability of radiant panel cooling to give air motion and to control humidity.

• The Village tests do not clearly show the level of noise acceptable to the occupants. However, a survey made during the second summer of operation revealed that only two of the 22 families reported discomfort due to noise, even though equipment noise in most houses exceeded 40 decibels. The reduction of sound from the outdoors due to closed windows was a significant contribution.

• If the cost of air conditioning would add about \$6 a month to a 20-year mortgage and would add \$25 per month if paid for in three years, less burden is placed on the owner if it is in the first mortgage.

• Year-round heating and cooling operating costs averaged approximately \$115.65 per year at Austin utility rates. At the same time the families saved about \$5.80 per week that

(Concluded on Page 28, Col. 1)

BEHIND PAGE ONE . . .

Sizing Room Air Conditioners

Electric Living Show Gives Consumers an Opportunity To Get the Facts on Cooling 6

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To be **SURE** of Satisfaction

Be **SURE** to Specify
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COPPER TUBING

FOR REFRIGERATION &
AIR CONDITIONING EQUIPMENT



READING TUBE CORPORATION

EMPIRE STATE BUILDING NEW YORK 1, N. Y.
WORKS: READING, PA.

**Indict 6 V-Belt
Makers on Charges
Of Price Fixing**

WASHINGTON, D. C.—The Justice Dept. announced that a Federal grand jury in Denver has indicted six large rubber companies on charges of illegal price fixing in the sales and distribution of industrial rubber drive belts.

Named as defendants were B. F. Goodrich Co., Akron; Goodyear Tire & Rubber Co., Akron; United States Rubber Co., Philadelphia; Gates Rubber Co., Denver; Dayton Rubber Mfg. Co., Dayton; and Boston Woven Hose & Rubber Co., Boston.

The companies were accused of unlawfully conspiring to fix uniform list prices, rates of discounts, terms, and other conditions for the sale of V-belts. The indictment, under the Sher-

man Anti-Trust Act, also charged the defendants with agreeing to raise, from time to time, the prices of the belts by lowering the rate of discount from list prices and to fix effective dates for the price changes.

Asked to comment on the action, a spokesman for B. F. Goodrich said the company hadn't had an opportunity to review the indictment, "but reaffirms the position taken by its witnesses before the Denver grand jury that it is innocent of the charges made."

Goodyear said the company has known of the Government's investigation of the V-belt industry but was surprised to learn it had been named a defendant.

"Goodyear has consistently maintained its independence of action in the intense competition conditions encountered in its V-belt business," the company stated. "Moreover, the reasonable levels of prices to consumers over the years, as well as the absence of actual price uniformity, indicates strongly that competition, not price fixing, is the rule of the industry."

Jones at G-E--

(Concluded from Page 1, Col. 2)

G-E product departments: the Commercial and Industrial Air Conditioning Dept.; the Home Heating and Cooling Dept.; and the Weathertron Dept.

Jones, formerly general manager of the G-E Low Voltage Switchgear Dept. in Philadelphia, is a native of Stoke-on-Trent, England.

He came to this country in 1925 and joined General Electric in 1939 as a member of the company's business training course upon graduation from the Wharton School of Commerce and Finance at the University of Pennsylvania.

After working with the Corporate and Tax Accounts Div., Jones served as a traveling auditor for the company from 1942 through 1947. In 1947 he was assigned to the headquarters of the G-E Auditing Div., Schenectady, N. Y., and in 1950 he was appointed assistant to the comptroller, General Electric Apparatus Dept.

In 1951, Jones was appointed manager of finance for the Switchgear Div. in Philadelphia, and in 1953 he was made general manager of the Low Voltage Switchgear Dept., the position he held until his recent appointment.

This month one of the three air conditioning components, the Home Heating and Cooling Dept., is moving its headquarters from Bloomfield, N. J. to Tyler, Texas, where it has recently completed a \$15 million plant for the manufacture of home air conditioning equipment.

**Moore Is President
At Bell & Gossett**

MORTON GROVE, Ill.—Bell & Gossett Co. has announced the election of R. Edwin Moore as president.

Formerly executive vice president, Moore succeeds Earl J. Gossett who will continue as chairman. Moore joined the company in 1927.

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LOW
temperature

LOWEST in operating costs, too! Kramer's new "L" THERMOBANK saves important dollars every day it works for you. It's the only LOW temperature automatic hot gas defrost system that works trouble-free at any temperature level, from plus 32° to minus 75°. Let us prove that it costs less to own the best!

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KRAMER TRENTON COMPANY
Trenton 5, New Jersey

For more information about products advertised on this page use Information Center, page 26.

Amana announces

DEEPFREEZE BACK IN BUSINESS AGAIN

as new division of Amana Refrigeration, Inc.

Amana Refrigeration, Inc. is pleased to announce the acquisition of the tools; name, trade marks, and patents; selected equipment; good will and other intangible assets—other than receivables—of the Deepfreeze Appliance Division, Motor Products Corporation.

To the appliance dealers of America, this means just one thing—Deepfreeze is back in business again!

Right now, Amana engineers and designers are busy seeing to it that a brand-new, way-ahead, line of Deepfreeze chest freezers gets started. It's going to be a typical Amana *quality line*—of truly fine chest freezers carrying the famous Deepfreeze name.

This new line of Deepfreeze chest freezers will be available through Amana distributors. And these new Deepfreeze chest freezers will be produced *at Amana, only by Amana*, by the spanking new Deepfreeze Division of Amana Refrigeration, Inc.

Into each of these outstanding "Deepfreeze chest freezers . . . made by Amana," will go the advanced production techniques and traditional Amana skill and craftsmanship that have made Amana famous as the world's largest manufacturer of food freezers.

The Deepfreeze Division of Amana Refrigeration, Inc., means a new dimension in freezer production. Now appliance dealers will be able to obtain, through Amana distributors, an outstanding line of chest models, in addition to Amana's already famous upright Freezers; Freezer-Plus-Refrigerators; Built-In Freezers and Refrigerators; Room Air Conditioners and Central-System Air Conditioning.

We strongly believe that this acquisition of Deepfreeze—and formation of the new Deepfreeze Division—will contribute to the healthy and vigorous growth of an Amana already on the march. And will mean increased sales for Amana distributors and dealers.

Deepfreeze By

*Now the Deepfreeze Division of
Amana Refrigeration, Inc.*



*Backed by a Century-Old Tradition
of Fine Craftsmanship*

Amana—World's largest manufacturer of food freezers—also produces • Freezer-Plus-Refrigerators • Built-In Freezers and Refrigerators • Room Air Conditioners • Central-System Air Conditioning
AMANA REFRIGERATION, INC. • AMANA 14, IOWA

For more information about products advertised on this page use Information Center, page 26.

Carrier Div. Appoints E. F. Rauscher to Post

SYRACUSE, N. Y.—Elbridge F. Rauscher has joined Carrier Corp. as manager of new products and their development for the Allied Products Div., it is announced by Loren Fletcher, vice president and general manager of the division.

The division manufactures automatic ice making machines, freezers and unit heaters, and air conditioning and refrigerating equipment for airplanes, trains, buses, and mobile homes.

For 12 years until 1954 Rauscher was chief product engineer for Easy Washing Machine Corp. Prior to joining Carrier, he operated his own distributing company.

Court Restrains Riggers from Row With Millwrights

FLINT, Mich.—Circuit Judge Stephen J. Roth recently issued an injunction restraining Riggers Union Local 575 from interfering with resumption of work by millwrights at neighboring Grand Blanc Fisher Body tank plant.

The respondents must show cause by June 19 why the order should not be extended permanently.

Petitioners were Millwrights Union Local 1102 and two of its members, the report continued.

The court action was taken after a union jurisdictional dispute at the plant over construction work involving steamfitters, riggers, and millwrights broke out in violence late last month there.

Frozen Foods 'Hold' Values --

(Concluded from Page 1, Col. 2) ly to the consumer, it was stated.

An analysis of the nutrition results reported by the Wisconsin scientists show the unique qualification of frozen foods as protective foods. Nutritionists throughout America are said to be swinging back to the concept of protective foods. These are foods high in natural vitamins, minerals, and protein (for building and conditioning the body at all age levels) and with just sufficient carbohydrate and calories for efficient body energy to function on busy schedules.

Blueprint Frozen Food Promotion

Industry leaders in the frozen food field have blue printed promotional material for carrying their case on the nutritional excellence of frozen foods direct-

ly to the consumer, it was stated.

An analysis of the nutrition results reported by the Wisconsin scientists show the unique qualification of frozen foods as protective foods. Nutritionists throughout America are said to be swinging back to the concept of protective foods. These are foods high in natural vitamins, minerals, and protein (for building and conditioning the body at all age levels) and with just sufficient carbohydrate and calories for efficient body energy to function on busy schedules.

Frozen 'Protective' Foods Vitamin, Mineral, Vegetable Content

Following is a brief analysis of how the frozen "protective" foods stack up in vitamin, mineral, and protein content.

Classification was made on the basis of milligrams (mg.) of nutrient present in average servings consisting of 3½ oz. of fruits and vegetables and of 6 fluid oz. of ready-to-serve juices.

Frozen orange juice, Brussels sprouts, broccoli spears, and grapefruit juice take top honors in vitamin C content. Each of the "Big Ten C" products, which include frozen collards, apricots, kale, cauliflower, and strawberries, have from three to five times what is considered to be a good ascorbic acid level—namely 16 mg.—for strong gums, teeth, and blood vessels.

Frozen Peas, Carrots Lead In Vitamin A

Frozen peas and carrots are highest in vitamin A. Leafy greens, mixed vegetables, winter squash, chopped broccoli, and apricots are other extremely good sources of this vitamin that is so important for highway safety because it prevents night blindness.

The Dixie favorite, frozen black-eye peas, captures first place in thiamine (B₁) content. Frozen peas (largest of any single vegetable crop frozen), asparagus, corn, okra, French fries, and orange juice are other fine sources of vitamin B₁, which steadies jangled nerves and tones muscles.

Southern vegetables—frozen okra, kale, and collard greens—are number 1, 2, and 3 in riboflavin (B₂). Frozen spinach, asparagus, broccoli, unsweetened boysenberries, mustard greens, black-eye peas, and Brussels sprouts also hit the honor roll in furnishing riboflavin—the "pep" vitamin.

Frozen Leafy Greens Contain Much Calcium

It's go, go, go with frozen leafy greens for calcium, with collard greens out in front. Frozen okra, rhubarb, broccoli, green beans, and baby limas are other leaders in calcium, which pairs up with phosphorus to produce strong bones and sound teeth.

Best source of phosphorus is black-eye peas. Frozen limas, corn, peas, asparagus, French fries, and mixed items are other leaders in phosphorus. Rank of products in iron content is nearly identical to that for phosphorus. Black-eye peas are first again. The leafy greens—frozen spinach, turnip, and mustard—and unsweetened boysenberries are other good sources of iron.

Products Lowest In Sodium Are First Diet Choice

Present-day nutrition concepts say products lowest in sodium are first choice in diets. The citrus juices, frozen fruits, and winter squash contain the least sodium, but many other frozen vegetables are also low in sodium.

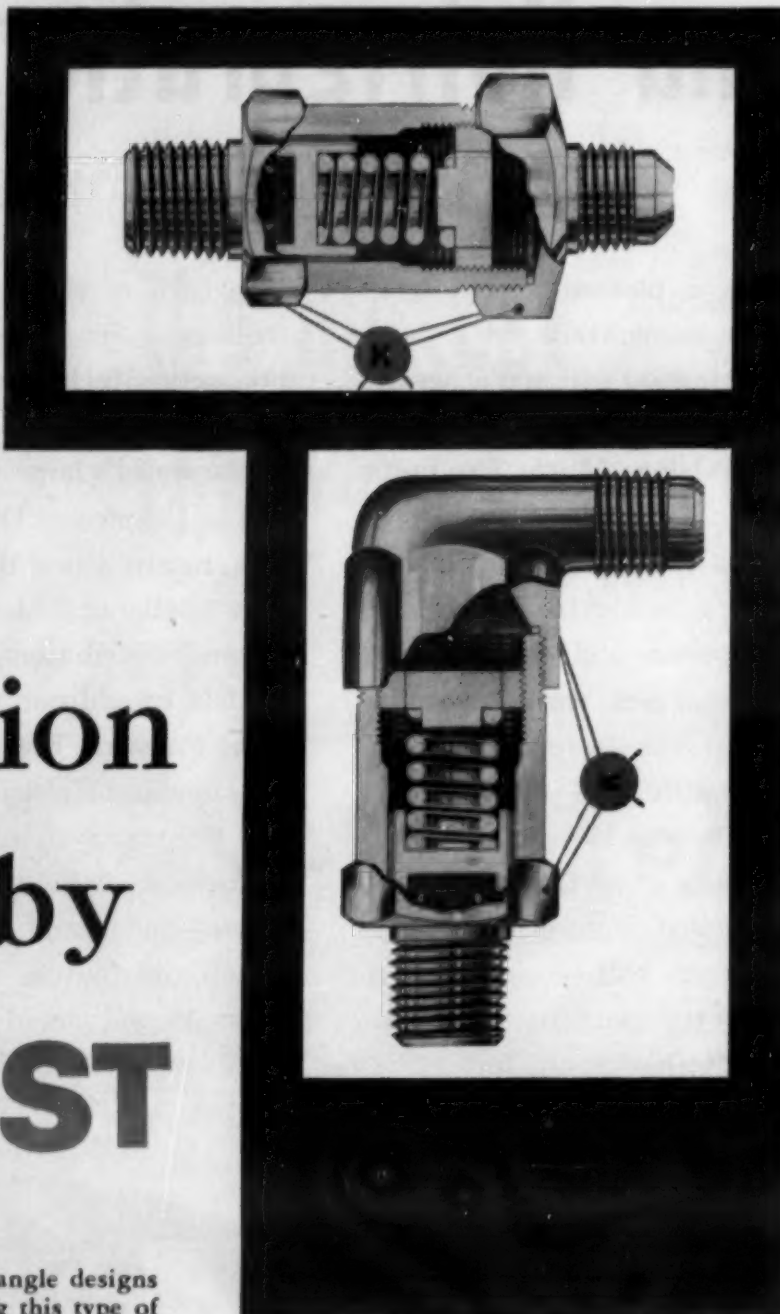
Frozen black-eye peas are best in furnishing body-building protein. Other leaders in protein are lima beans, peas, corn, broccoli, Brussels sprouts, asparagus, and mixed items.

Reprints of the entire article on the nutritional value of frozen foods are available from the National Association of Frozen Food Packers, 1415 K St., N.W., Washington, D. C.

a "relief" for the refrigeration industry by KEROTEST

Kerotest relief valves in both in-line and angle designs provide a "relief" to the customer requiring this type of valve. No longer is specification of seating material necessary. Through the use of *one* seating material, these valves may be used with all modern refrigerants except ammonia. These valves are designed and built to comply with the requirements of the American Society of Mechanical Engineers Code and Kerotest is authorized to apply the appropriate code symbols. For more detailed information on available pressure settings and sizes, write today for Kerotest booklet RV-1. We will be pleased to furnish you with this information.

KEROTEST MANUFACTURING COMPANY, 2523 LIBERTY AVE., PITTSBURGH 22, PENNSYLVANIA



ASHAE Program - -

(Concluded from Page 1)

mittee and vice president, Carrier Corp.

The semiannual meeting will consist of seven sessions during which 14 papers and two symposiums will be presented. The second symposium, conducted by Prof. C. H. Pesterfield, will provide an interesting exchange of information on codes and standards.

The complete program is as follows:

MONDAY, JUNE 18

9 a.m.—Registration, Main Lobby.

9:30 a.m.—First Session, West Ballroom.

Call to order by Pres. John W. James.

Greetings by P. R. Achenbach, chairman, committee on arrangements.

"Comparative Performance of Indirect Water Heaters" by L. L. Hill and W. S. Harris.

"Natural Convection and Radiation in a Panel Heated Room" by T. C. Min, L. F. Schutrum, G. V. Parmelee, and John Vouris.

12 Noon—Welcome Luncheon, Blue Room.

Toastmaster, Gen. W. A. Danielson.

Speaker, Brig. Gen. Thomas A. Lane, Engineer Commissioner, District of Columbia.

1 p.m.—Golf Tournament, Congressional Country Club.

1 p.m.—Inspection Trip—David Taylor Model Basin.

7:30 p.m.—Get-Together Party, Shoreham Terrace.

TUESDAY, JUNE 19

9 a.m.—Registration, Main Lobby.

9:30 a.m.—Second Session, Main Ballroom.

Call to Order by Vice Pres. P. B. Gordon.

"Heat Requirements of Snow Melting Systems" by W. P. Chapman and Samuel Katunich.

"Small Pipe Perimeter Heating in a Residence" by D. R. Bahnfleth, H. T. Gilkey, and C. F. Chen.

"Heat Load Calculations by Thermal Response" by W. R. Briskin and S. G. Reque.

9:30 a.m.—Third Session, West Ballroom.

Call to order by Vice Pres. E. R. Queer.

"Air Velocities in Two Parallel Ventilating Jets" by Alfred Koestel and J. B. Austin, Jr.

"Dependence of Water Vapor Permeability on Temperature and Humidity" by S. C. Chang and N. B. Hutcheon.

"Effect of Unbalanced Air Pressure on Permeance" by F. A. Joy and D. R. Fairbanks.

12 Noon—Inspection trips to Naval Ordnance Laboratory and National Institute of Health.

1 p.m.—Sightseeing trip to Mt. Vernon.

WEDNESDAY, JUNE 20

9 a.m.—Registration, Main Lobby.

9:30 a.m.—Fourth Session, Main Ballroom.

Call to order by Pres. John W. James.

"Laboratory for Solar Energy Study at Minnesota" by R. C. Jordan and J. L. Threlkeld.

"Intermittent Ground Grids

for Heat Pumps" by G. S. Smith.

"Intermittent Heating and Cooling of Buildings" by P. L. Pfennigwerth and Merl Baker.

9:30 a.m.—Fifth Session, West Ballroom.

Call to order by Vice Pres. P. B. Gordon.

Standards and Codes Symposium, C. H. Pesterfield, Moderator.

Standards and Codes in General—J. S. Fitts.

Protective Standards—Cyril Ainsworth

Government Aspects—R. S. Dill

Local and Municipal Standards and Codes—John W. James

Commercial-Industrial Standards—G. S. Jones

Establishment of Standards and Codes through Experimentation—L. N. Hunter

2 p.m.—Sixth Session, Main Ballroom.

Call to order by Vice Pres. E. R. Queer.

Symposium on Residential Air Conditioning, L. H. Haeger, Moderator.

New Concepts of Comfort Cooling—W. H. Scott

Combination Fuel Operated Systems—W. E. Hood

Fuel Operated All-Year Systems—A. B. Newton

Electrically Operated Systems—E. R. Ambrose

Future System Developments—W. F. Friend

2 p.m.—Seventh Session, West Ballroom.

Call to order by Pres. John W. James.

"Performance of One-Row Tube Coils with Thin-Plate Fins, Low Velocity Forced Convection" by D. G. Shepherd.

"Temperature and Humidity Effect on Odor Perception" by W. F. Kerka and C. M. Humphreys.

"The Indirect Evaporative Air Cooler" by J. R. Watt and R. A. Bacon.

Business Meeting.

6:30 p.m.—Social Hour, West Ballroom.

7 p.m.—Semi-Annual Banquet, Terrace Ballroom.

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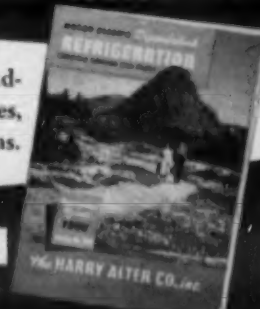
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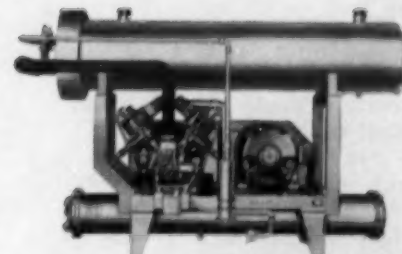
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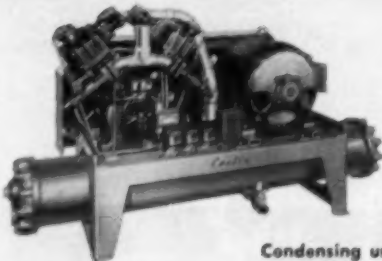
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Packaged Liquid Chillers—7 1/2 to 100 tons—F-12 or F-22. With room console units to provide controlled cooling and heating without duct work.



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For more information about products advertised on this page use Information Center, page 26.

Electric Living Show Pushes Room, Central Air Conditioners, Demonstrates Unit Selection Method and Proper Wiring Needs

Room Cooling Sizing Chart

This chart is intended as a guide, but not as a substitute for a calculation sheet or for facts regarding a specific model.

Nominal Size	Wattage	Square Feet Floor Area			
		(4) Cost Per Hour	(1) Heavy Use	(2) Average Use	(3) Light Use
1/2	650	1.6¢	90	115	165
3/4	900	2.2¢	135	175	240
3/4 (Special 7 1/2 amp.)	1050	2.6¢	170	225	300
3/4 (Regular)	1250	3.1¢	225	300	400
1	1600	3.9¢	310	410	650
1 1/2	2200	5.4¢	475	650	850

- (1) Factors which contribute to heavy use:
- (a) Top floor with uninsulated roof.
 - (b) Large west windows.
 - (c) Sun on two walls.
 - (d) Light on when sun shines.
 - (e) Heavy occupancy or heating traffic.
 - (f) Meetings in offices or parties in homes.
 - (g) Abnormal ventilation.
- (2) Factors which contribute to average use:
- (a) Normal office with average lights, exposure, occupancy, and traffic.
 - (b) Oversize for a normal home except room with heavy use conditions listed above.
- (3) Factors which contribute to light use:
- (a) Office without any heavy use conditions.
 - (b) Normal home living with long hour operation for comfort.
 - (c) Best sleeping comfort if cooler is not too large.
- (4) Based on cost of electricity: At 2.45¢ per kwhr.

Wiring Recommendations:

- Size
- 1/2 Can usually be connected to any existing outlet.
 - 3/4 Caution should be used if a heavy lighting load, appliance, or television is on same circuit.
 - 3/4 240 Volt circuit recommended for regular model.
 - 1 Must operate on 208 or 240 volt service.
 - 1 1/2 Must operate on 208 or 240 volt service.

Where installation requires new 240 volt service in a one, two, or three dwelling unit building, refer to Residential Wiring Book.

CHICAGO — Cooperation between air conditioning equipment distributors and the local Electric Association made this city more comfort conscious during the 1956 Air Conditioning Show which ran in the Electric Living Institute last month, reports R. J. Heier, chairman of EA's air conditioning group.

Deciding on the Chicago Tribune as official advertising medium for the show, participating air conditioning equipment distributors bought more than 10 double page layouts during the 1956 campaign. 66% advertising space was accompanied by 34% editorial matter covering air conditioning exclusively.

In addition, the Tribune again conducted a reader contest, prizes for which included the winner's choice of a 3/4-hp. room air conditioner of any make sold by participating distributors. Winners could, if they chose, take cash of equal value, which would be applied toward the purchase of any make central air conditioning unit.

The promotion covered not only room units, as in past years, but also central air conditioning, dehumidifiers, humidifiers.

A miniature home, mounted on a turntable, showed effects of insulation, sunlight, and other factors which determine effectiveness of correctly chosen air conditioning equipment. Repeated demonstrations made use of a wiring table, explaining



HEARING the room cooling capacity story from attendant Ken Kelly is Sidney Yexley of Commonwealth Edison Co., left. Miniature house mounted on turntable at the Electric Living Institute was used to demonstrate how sunlight, insulation, window area, and room traffic should be considered in selecting the right size air conditioner.



EMPHASIZING importance of proper size wiring for air conditioning, Vincent Farin points to a volt meter which registers voltage drop as electric iron, coffeemaker, toaster, and refrigerator motor are operated from no. 14 wire with 15 amp fuse. No. 12 circuit at right provides adequate power for operation of 1/2-hp. window unit shown at left.

of any air conditioning unit was also shown.

Various wire and cable manufacturers combined with the EA to produce literature giving full details on proper wiring, how to select wires, and where to turn when making alterations.

Air conditioning units dis-

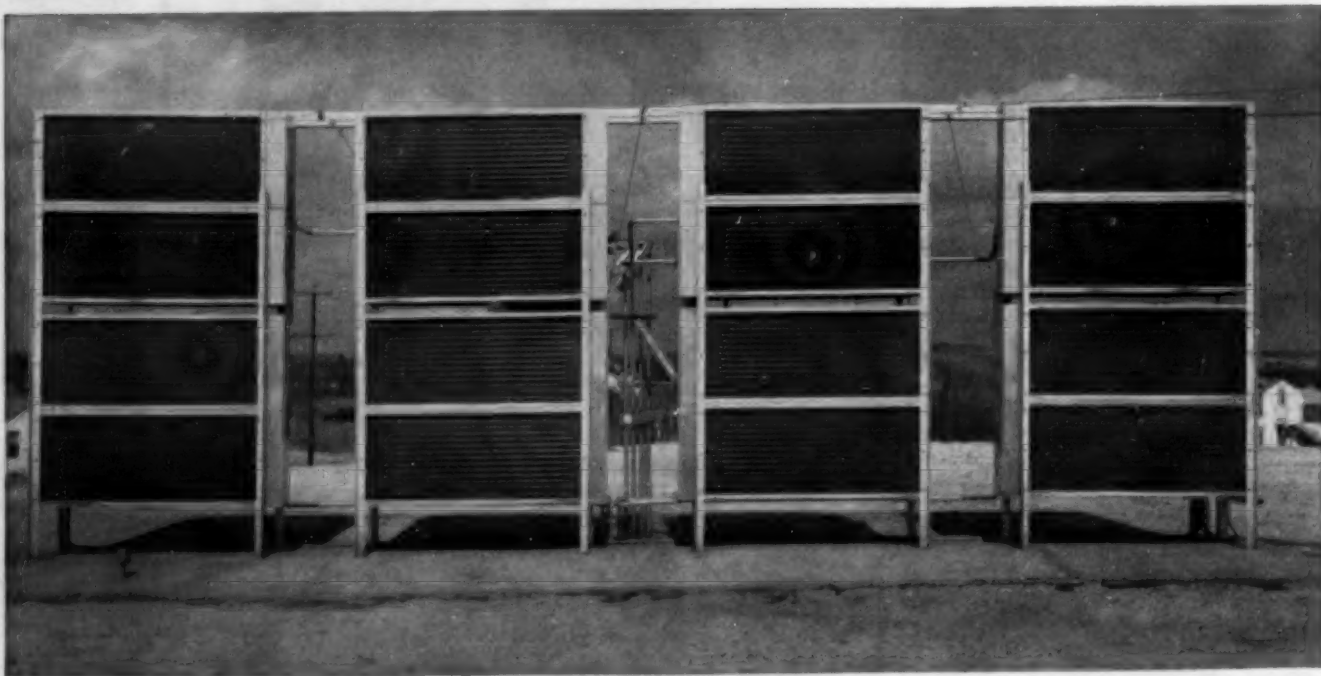
playing a wide variety of styling and colors made by over 15 manufacturers were on exhibit.

Anyone contemplating the purchase of an air conditioner could obtain full information on room cooling capacity, model number, price, and other information to help him select.

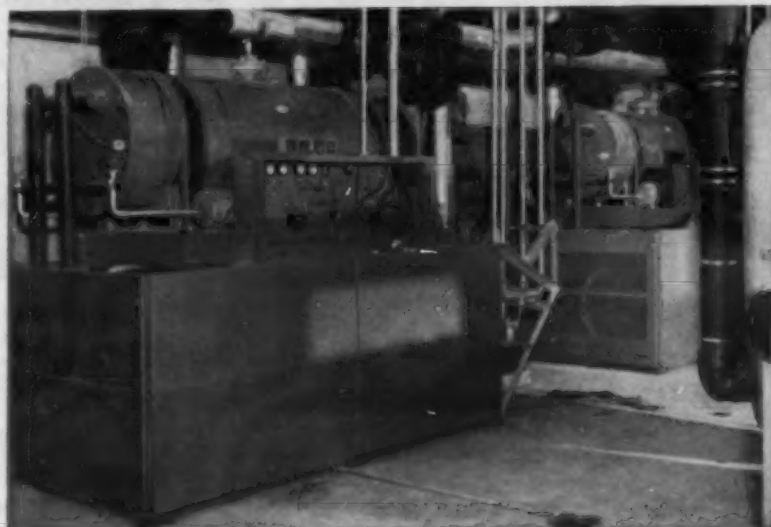


HOW TO DELIVER FROM AN

LEFT: Handy-Andy's huge air-cooled installation performs a valuable public service by helping conserve water for San Antonio's growing population. Success of this installation points the way to more air-cooled systems for Handy-Andy's expanding chain of supermarkets.



ABOVE: "Freon-12" refrigerant for 100 tons of air conditioning is cooled by these four roof-mounted Kramer-Trenton Unicon Condensers. Fans draw 27,200 cu. ft. of air per minute through the condensers to maintain effective cooling, even though outside temperatures go above 100°F.



LEFT: Four twin-mounted Brunner compressors provide 100 tons of air conditioning for a total of 43,000 sq. ft. of floor space in the Handy-Andy community shopping center. The original charge of "Freon" has helped maintain peak operating efficiency for the system since it was installed.

Conditioning Box Tests Rocket Motors Under Temperatures from 170 to -100°

EL MONTE, Calif.—A "conditioning box" in which new rocket motors can be tested for performance in extreme temperatures has been designed for one of the nation's leading rocket test centers, Aerojet-General Corp. of Azusa and Sacramento, Calif.

This new piece of equipment is so constructed that complete rocket motors can be lowered into it and then be subjected to temperatures ranging from 170° F. to -100° F. to assure proper functioning.

Moore & Hanks Co. of El Monte, working in conjunction with Pacific Refrigeration Co., helped design and build the unit, which measures 30 ft. by 8 ft. by 6 ft. high.

The box "will handle an in-

ternal product load of 7,500 B.t.u. per hour at -90° F.," the announcement said. "For higher internal heat loads at low temperatures, a supplementary liquid CO₂ injection system is provided.

HOLDS TEMPERATURE CONTROL TOLERANCES TO 3° EACH WAY

"Temperature control tolerances are held at a plus or minus 3° F. in time and space, according to government specifications for testing of rocket motors."

The box has an inner liner of aluminum for non-sparking surface. The outer casing is of cold rolled sheet steel, providing protection against the weather (no additional protective struc-

ture or building is required). For semi-portability, the unit is mounted on wide flange steel skids.

Boxes are insulated with 9 in. of glass fiber and are completely vapor-sealed.

Two full top opening doors are operated automatically by a pneumatic hydraulic system. When open, they expose the entire working area (20 ft. by 6 ft.). Conditioning coils of copper tubes and aluminum fins are mounted at one end, with fans mounted above and return air duct run along one side of the unit.

CASCADE-TYPE REFRIGERATION PROVIDES COOLING

Cooling is produced by a cascade-type mechanical refrigeration system, using "Freon-13" and "Freon-22" refrigerants and two 7½-hp. compressors.

"Direct expansion cooling coil

transfers the heat from within the box to the 'Freon-13' refrigerant," it was pointed out.

"The fan motors are mounted externally with special stainless steel sealed shaft assemblies running through the wall.

"The CO₂ injection system uses 300 p.s.i., 0° F. liquid for producing the supplementary cooling. The liquid CO₂ when sprayed into the air stream becomes a fine snow which then sublimates and absorbs heat. The resulting CO₂ gases are then exhausted from within the chamber.

"Heating is accomplished by an explosion-proof electric air heater.

Engineering Firm Formed

NEW YORK CITY—Formation of Engineering Design & Development Co. here to do design, consulting, and construction work on all types of chemical, metallurgical, and industrial

plants has been announced by P. Sphaellos, head of the management.

The organization is composed of a group of long-practicing mechanical, chemical, electrical, and civil engineers and architects. The firm is located at 25 Broad St.

Honeywell Earnings Hit Record High In '55, Up \$4 Million over '54

MINNEAPOLIS—Earnings of Minneapolis-Honeywell Regulator Co. in 1955 increased by approximately \$4 million over the previous year to reach a new high of \$19,278,648, final figures on the year's operations showed.

The 1955 net income was equal, after preference dividends, to \$2.98 a share on 6,355,606 shares of common stock outstanding. In the previous year, net income was \$15,345,203, or \$2.42 a share on 6,345,906 shares after giving effect to a two-for-one stock split in April of 1955.

The company's 1955 sales were the highest in its 70-year history, being \$244,482,068 as compared to \$229,401,837 in 1954.

Substantial sales increases in major civilian fields accounted for the year's record volume, Harold W. Sweatt, board chairman, and Paul B. Wishart, president, said in the annual report to shareholders.

"The principal gains were made in the domestic and commercial heating and air conditioning controls markets, in sales of industrial controls, and in foreign sales," they added. "Deliveries of defense products decreased in 1955 but it is anticipated that they will increase in 1956."

The year's sales total was increased by \$6,056,410 and net income by \$997,503 as a result of the consolidation, for the first time since 1939, of all of the company's 11 foreign subsidiaries.

Modine Ups Kohler In Industrial Sales

RACINE, Wis. — Peter J. Kohler, product design engineer with Modine Mfg. Co. since August, 1950, has been promoted to sales engineer of the Modine Industrial Div. Kohler's previous duties were primarily with the company's Heating and Air Conditioning Div.

At the present time, Kohler is vice president of the Heating and Cooling Coil Manufacturer's Association; chairman of the engineering committee of the Convector Manufacturer's Association and a member of the CMA and the Institute of Boiler and Radiator Manufacturer's Association joint engineering committee.

A Dropped Conditioner or Injured Man can cost you more than a

HYKER
WALKS UPSTAIRS—YOU DON'T DRAG IT!
910 W. Looming • Phila. 49, Pa.

HIGH-CAPACITY COOLING AIR-COOLED SYSTEM

Texas supermarket installation

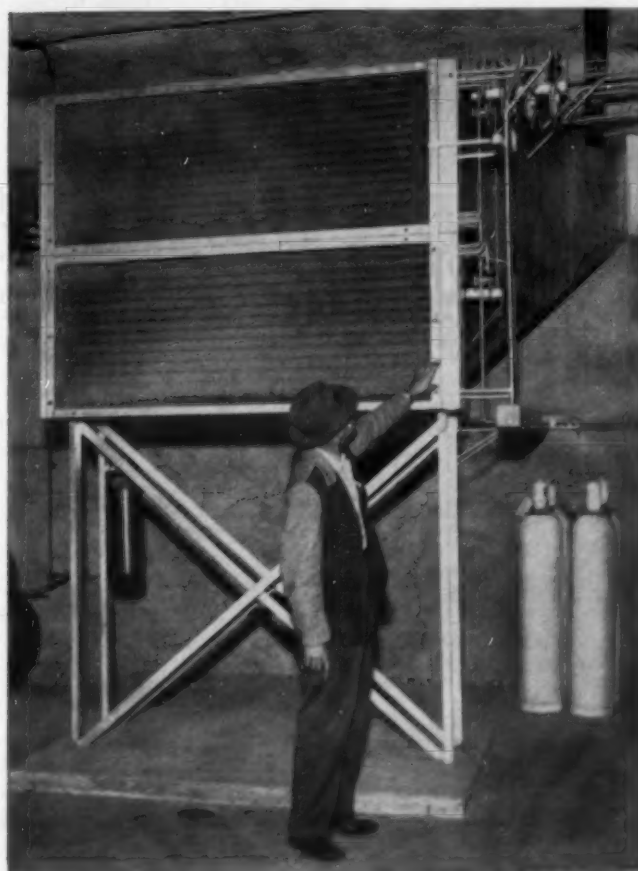
provides 162½ tons' capacity with air-cooled condensers and "Freon-12"*

Water is conserved and maintenance expense saved by using air cooled condensers with "Freon-12" refrigerant at Handy-Andy Community Store No. 2, San Antonio, Texas. Handy-Andy's 100 tons of air conditioning plus 62½ tons of refrigeration for display cases and storage rooms are believed to be the nation's largest single installation of air cooled equipment.

Effectiveness of the Handy-Andy installation is due in part to the charge of Du Pont "Freon" refrigerant in the cooling system. Long, efficient service for any refrigerating or air conditioning system is aided by the uniform

quality and purity of "Freon" refrigerants—the result of Du Pont's 25 years' experience in the manufacture of "Freon". And "Freon" refrigerants are ideal for food-industry installation because they are safe—nonflammable, nonexplosive and virtually nontoxic. On your next refrigeration or air conditioning job, be sure you specify a system charged with "Freon", made by Du Pont.

Want more information or technical data on uses of "Freon"? Write to E. I. du Pont de Nemours & Co. (Inc.), "Kinetic" Chemicals Division 6, Wilmington 98, Del.



Five Kramer-Trenton air cooled Unicon condensers in the basement maintain 62½ tons of refrigeration for storage rooms and display cases. 13,600 cu. ft. of ground air per minute sweeps into the basement, through the condensers and out the opposite side of the building.



19 Brunner compressors sized from ¼ to 5 hp. supply refrigeration for storage rooms and cases for meats, vegetables, frozen foods and dairy products. In addition to conserving water, saving in condenser descaling costs is a bonus feature of the Handy-Andy installation.

EXPERIENCE HAS NO COMPETITORS

1931  1956

25 YEARS OF

FREON

SAFE REFRIGERANTS

"Freon" is Du Pont's registered trademark for its fluorinated hydrocarbon refrigerants.



BETTER THINGS FOR BETTER LIVING
... THROUGH CHEMISTRY

Inside Dope

By GEORGE F. TAUBENECK

(Concluded from Page 1, Col. 1)

BUT—batteries stored in chest-type freezers will retain their electrical charges almost indefinitely! It pays any garage owner to install one, two, three or more freezers for this purpose.

New market, fellows. Go after it!

Checkup for Citizens

This checklist may help you decide whether or not a law, expenditure, or other governmental proposal is good for you and your fellow citizens.

It might be a useful thing to clip and employ during this election year.

1. Is it necessary? Or is it

something that is not really needed or, perhaps, already being provided by a private or public group?

2. Can we afford it? Remember, there is no limit to what we would like, but there is a limit to what we can afford.

3. What will it cost ultimately? Many proposals are like icebergs—only a small fraction of the total cost is apparent on the surface.

4. How will it affect basic liberties? If it imposes unreasonable or illegal restraints on your life or that of others, it should be vigorously opposed.

5. Is it in the balanced best interest of all? If it is designed to benefit a small group or special interests while taking unfair advantage of others, work for its defeat.

6. Is it a "foot-in-the-door" proposition? Compromising a little now may bring an oppressive burden later, either in more

regulations or more taxes or a combination of both.

7. Does it place too much power in the hands of one individual or group? Once decisive power is granted to a non-elected public official, a commission, or a municipal authority, the private citizens lose effective control.

8. Does it recognize the importance of the individual and the minority? This is a cornerstone of our Republic.

9. Is its appeal based on emotional propaganda or facts? The farther a proposition gets away from facts, the more critical one should be.

10. Does it square with your moral convictions? If so, fight for it. If not, oppose it.

Interruptions

Touring group of foreign manufacturers and labor leaders were conducted through a

Detroit factory recently.

An apparently bitter argument broke out, with much armwaving and fingershaking, amongst the tourists.

Anxiously the factory guide asked the group's interpreter what all the shouting was about.

"Some of them," revealed the interpreter, "insist that these methods are impossible!"

Mischievous Johnny was chided:

"How do you expect to get into heaven?"

After a moment's thought he impeded:

"I'll run in and out and in and out and keep slamming the door till they tell me, 'for goodness sake, come in or stay out.' 'Then I'll go inside and stay.'"

"What a sweet doll. Does she say 'Mama' when you hug her?"

"This isn't an old-fashioned

doll," upposed the little owner. "When she's hugged she squeaks: 'Oh Boy!'"

An old man from the hill country took his first trip to a large city. Walking into one of the skyscrapers he saw a doorman standing by a special kind of door. An old woman stepped in, a light flashed red, and she was gone. A few seconds later the elevator descended, the door opened and a beautiful young damsel stepped out.

"Begorra," said the old man, blinking his eyes. "I should have brought the old lady with me."—*Rotarian*.

Picture of the Week



YOU'RE OUT OF THE GAME—but you may win a Norge home freezer. R. C. Connell, Norge vice president of sales reenacts what the umpire said to Casey Stengel of the New York Yankees. The record of all ejections in the game this season will be kept on a giant scoreboard during the Norge freezer season-long baseball derby. At the end of the season, a Norge home freezer will be awarded to the major league manager banished from the most games, and entitled to be termed "most in need of cooling off." Dick Connell, above, looks more like an umpire than any umpire "Dope" has seen yet.

Cool consolation for banished baseball managers: a home freezer will be offered to the major league team pilot ejected by umpires from the most games this season.

Norge Div., Borg-Warner Corp., reasons that the winner will be "most in need of cooling off."

An additional prize of an automatic clothes dryer for "crying towels" was voted down as unnecessary by company experts, according to R. C. Connell, Norge vice president.

Norge will issue monthly standings on the progress of the season-long baseball derby.

Gags of the Week

It's all right to have loved and lost—but it takes money to break in a new girl.—DAN BENNETT.

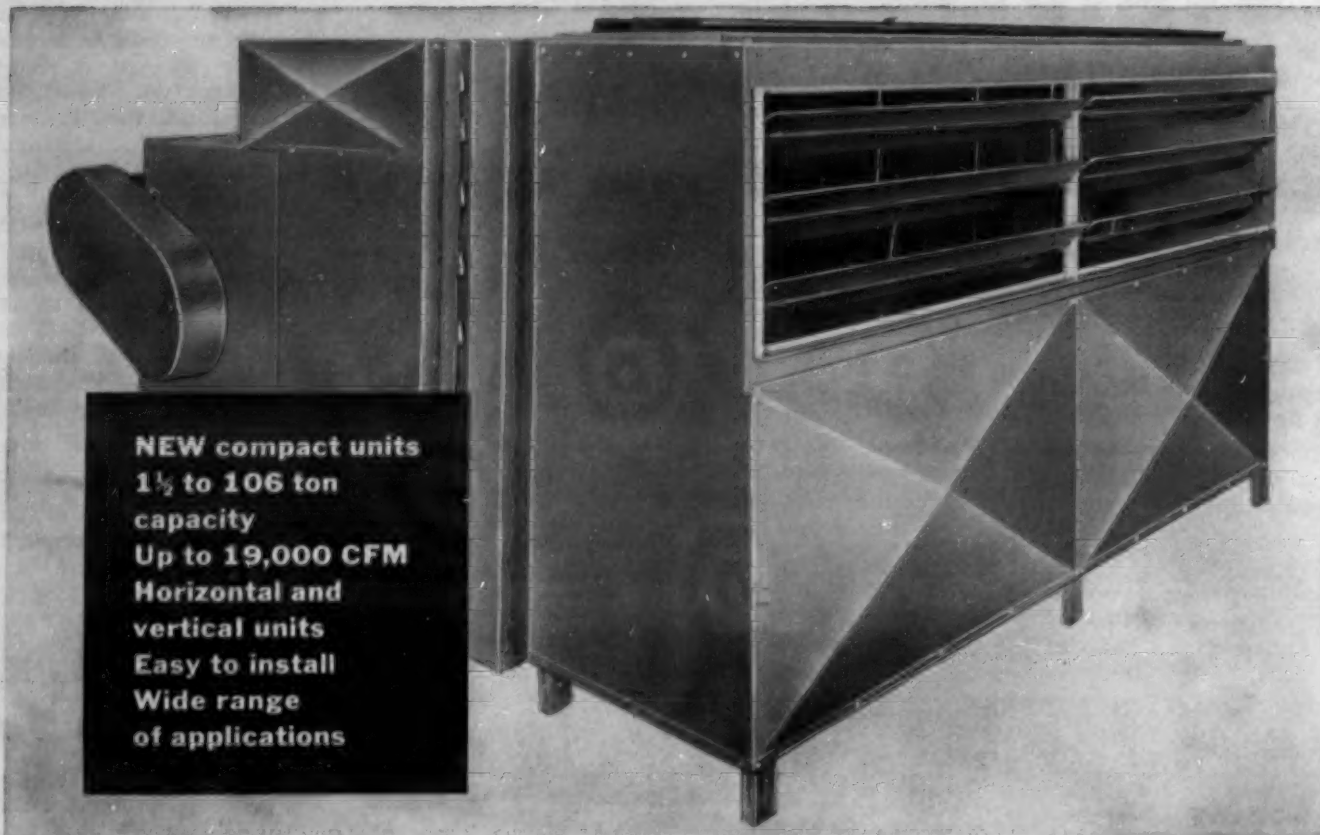
Gossip is making a mountain out of a molehill by piling on the dirt.—MYRON COHEN.

Thrift is a wonderful virtue, especially in an ancestor.

Work hard and save your money, and when you are 65 you can retire and have the things only young people can enjoy.

It takes little time to administer a rebuke, but it takes a long time to forget it.—*Chinese Proverb*.

The most ADAPTABLE AIR CONDITIONER ever offered



NEW compact units
1½ to 106 ton capacity
Up to 19,000 CFM
Horizontal and vertical units
Easy to install
Wide range of applications

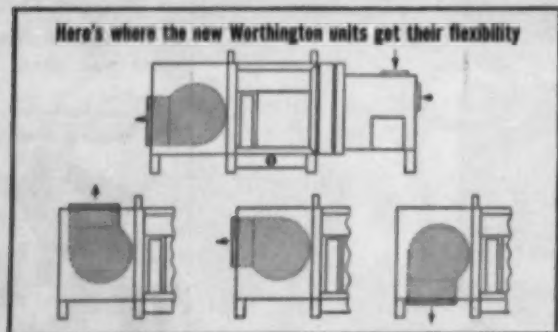
Horizontal construction permits suspension of unit from platform or ceiling. Shown here is large-sized unit with damper section.

New Worthington units save you space, time and money

Extreme FLEXIBILITY of the new line of Worthington air conditioners permits you to install them as you wish, where you wish—saving you valuable space, time and installation costs.

Designed to work with a central refrigeration system these new units fit your exact requirements—from large plants and offices to small stores and shops.

The fan section may be mounted with front, top or rear discharge—as shown in the diagram below. The motor can be mounted on the top, front, back or at either end.



Here's maximum adaptability in every installation!

Standard unit consists of base section, fan section and coil section—all constructed of rugged, fabricated steel that is Bonderized and coated with a corrosion resistant enamel. For more facts on this new line write Worthington Air Conditioning, Sec. A6105, Harrison, N. J.

A.4.105

- exclusive 3½" motor base adjustment for true belt tension
- up to 81 coil combinations
- quiet, dynamically balanced fans
- accessories interchangeable between horizontal and vertical units
- accessibility—easily removed fan section and panels simplify inspection

WORTHINGTON



CLIMATE ENGINEERS TO INDUSTRY, BUSINESS AND THE HOME

Westinghouse Div. Names Smith Mgr. of Public Relations

MANSFIELD, Ohio — Joseph B. Smith has been named public relations manager for the Electric Appliance Divs. of Westinghouse Electric Corp.

John W. Craig, Westinghouse vice president and the divisions' general manager, announced the appointment of Smith to succeed William C. Parker, who recently was named manager of the Westinghouse New York public relations office. Smith will make his headquarters in Columbus, Ohio, coordinating from there public relations activities of the divisions' plants in Mansfield, Columbus, and Newark, Ohio, and East Springfield, Mass.

At the same time, Craig announced the promotion of Her-

bert Flint, Jr., to be public relations representative in Mansfield. The 27-year-old Ohio State university graduate has been with Westinghouse here.

Friedrich Appoints Georgia Distributor

ATLANTA — The newly-formed Friedrich Distributing Co. of Georgia, 587 W. Whitehall St., S.W., has been appointed southeastern outlet for Friedrich Refrigerators, Inc. of San Antonio.

Officials said the new firm here was incorporated as Craft-Robertson-Love, Inc. H. B. Craft is president; W. V. Robertson, vice president; and William P. Love, vice president and general manager.

Robertson will represent the company in south Georgia. In the Savannah area the company will be represented by Rogers Refrigeration Service.

Another Baltimore Dept. Store Drops Major Appliances

BALTIMORE — Another downtown department store is doing away with its major appliance department.

Hochschild, Kohn & Co. disclosed that it planned to discontinue handling major appliances by June 1 because this operation has not been profitable and because it wants to enlarge other departments.

The store has been selling major appliances for more than 35 years. Some 3,000 sq. ft. of space on the lower floor has been devoted to these items.

Two other downtown department stores—Hutzler Bros. Co. and Stewart & Co.—discontinued their major appliance departments several years ago, it was added.

WHAT . . . WHEN . . . WHERE

— A Guide to Coming Events of Interest

National Association of Retail Grocers, June 10-14
Shrine Auditorium and Exhibition Hall, Los Angeles

National Association of Electrical Distributors (NAED)
Annual Convention
June 10-14, Ambassador and Chelsea hotels
Atlantic City, N. J.

National Association of Plumbing Contractors (NAPC)
Annual Convention and Exposition
June 11-14, Convention Hall, Milwaukee

National Oil Heat & Air Conditioning (NOHAC) Exposition
June 11-15, The Coliseum, New York City

American Society of Heating & Air-Conditioning Engineers (ASHAE) Semi-Annual Meeting
June 18-20, Shoreham hotel, Washington, D. C.

Summer Home Furnishings Market
June 18-29, American Furniture Mart and Merchandise Mart, Chicago

NEW... MULTIPLE FREEZER SHELVES* by BOHN

SHIPPED READY FOR INSTALLATION

**new, low cost, packaged
evaporator reduces cost of
handling and installation**

- **READY FOR INSTALLATION**—no joining or further processing of aluminum required in customers' plants . . . simply open out and install.
- **PACKAGED TO SAVE**—shipping and handling costs in Bohn and customers' plants are reduced with shelves shipped in compact, easy-to-handle cartons.
- **COLOR UNIFORMITY**—shelves may be color-anodized with no costly, time-delaying color matching in customers' plants.
- **BOHN TRIANGULAR ALUMINUM TUBING**—gives shelves greater primary surface, better air circulation, greater rigidity. Topside is flat to form a level shelf surface.
- **OPTIONAL TOP PAN LINER**—if your specifications require, a top pan liner may be included as an integral part of unit.

*Pat. Applied For



FREEZER PLATES
UNIT COOLERS
EVAPORATORS
CONNECTORS
TUBING
COILS

BOHN

ALUMINUM AND BRASS CORPORATION
1400 LAFAYETTE BUILDING • DETROIT 26, MICHIGAN

SALES OFFICES: Boston • Chicago • Cleveland • Dayton • Detroit • Indianapolis
Milwaukee • Minneapolis • Moline • New York • Philadelphia • Rochester • St. Louis

For more information about products advertised on this page use Information Center, page 26.

Tips on Blower Installations

Put On Belt Adjuster, Keep Flat from Oiled Bearing, Line Up Variable Pitch Pulley with Motor Pulley, Install Belt by Hand, Loosen, Remove Blocks, Clips, Locate, Run Blower

E. LANSING, Mich.—Some tips on proper installation and trouble shooting of blowers was offered to heating and air conditioning dealers attending a conference here recently by Al Galaba, vice president in charge of engineering for Morrison Steel Products, Inc.

The tools needed to work on blowers, Galaba said, include a screw driver, carpenter's square, allen head wrench, and an oil can.

If the blower is received from the manufacturer as an assembly to be put together on the job, Galaba offered these hints:

First install the belt adjuster. If there is a flat on either side of the shaft, make sure it does not get into the bearings. If it does, you will get a ticking noise and wear out the bearing.

Make sure the bearing is oiled.

Lining Up Pulleys Is Most Important

Line up the variable pitch pulley with the motor pulley. That is the most important thing you can do, he asserted.

One side of the belt has to be loose, he noted. If the belt is too tight, it will pull the bearing that holds the wheel, making it noisy. This will cause bearing wear.

If the belt is too loose, you will lose r.p.m.'s.

As a general practice, he noted, the manufacturer will ship the belts tight. Loosen them.

Make sure you remove the blocks or shipping clips used to hold the unit steady during shipment.

Never Twist Belt on With Screwdriver

Always install the belts by hand. Place the belt over the variable pitch motor pulley first, then over the blower pulley. Never twist the belt on with a screw driver. This may scuff the belt and cause noise.

Run the blower and correct its location if need be. Make sure the motor is rotating toward the cut off and is not running in the wrong direction. If it is, change it.

How to Install When Blower Shipped as Unit

When the blower is shipped as a unit, Galaba offered this advice:

Loosen the belt and remove shipping clips.

Check the belt alignment.

Check the bolts holding the motor and belt adjuster, making sure they are in place.

Check for oil in the bearing.

Check rotation.

Check for wheel rubbing.

Tighten all loose screws.

Be sure that the rubber grommets for the feet are in place.

Be sure the BX cable is not rubbing.

Noise Most Common

Complaint to Trouble Shooter

When trouble shooting, Galaba said, the most common complaint is noise. The best tool for

locating the source of a noise is a rod for probing. You can locate the noise precisely by listening to the end of the probe.

Noise can be divided into four categories: humming, rattle, ticking, and thumping.

Humming noise is caused by a noisy blower, a breakdown of the seal which produces a metal to metal contact, and a tight belt. It can also be caused by missing rubber in the belt adjuster which tilts the blower and breaks the seal.

Causes of Humming

Other causes of humming are rubber grommet feet missing, other rubber mounting broken

down, and the furnace door too close to the blower.

Rattles are caused by a loose bolt or nut, the BX cable touching, loose wheel or pulley, a loose part left in the assembly, or the furnace door rubbing the blower.

Ticking can be caused by a loose variable pitch motor pulley, a flat shaft running in the bearing, the motor bearing, a tag that has not been removed, or the wheel rubbing on the side of the housing.

Thumping can be caused by the belt set too loose, a hump in the belt joint, or the pulley out of balance. Try to correct for the latter by filing the shaft and rotating the pulley.

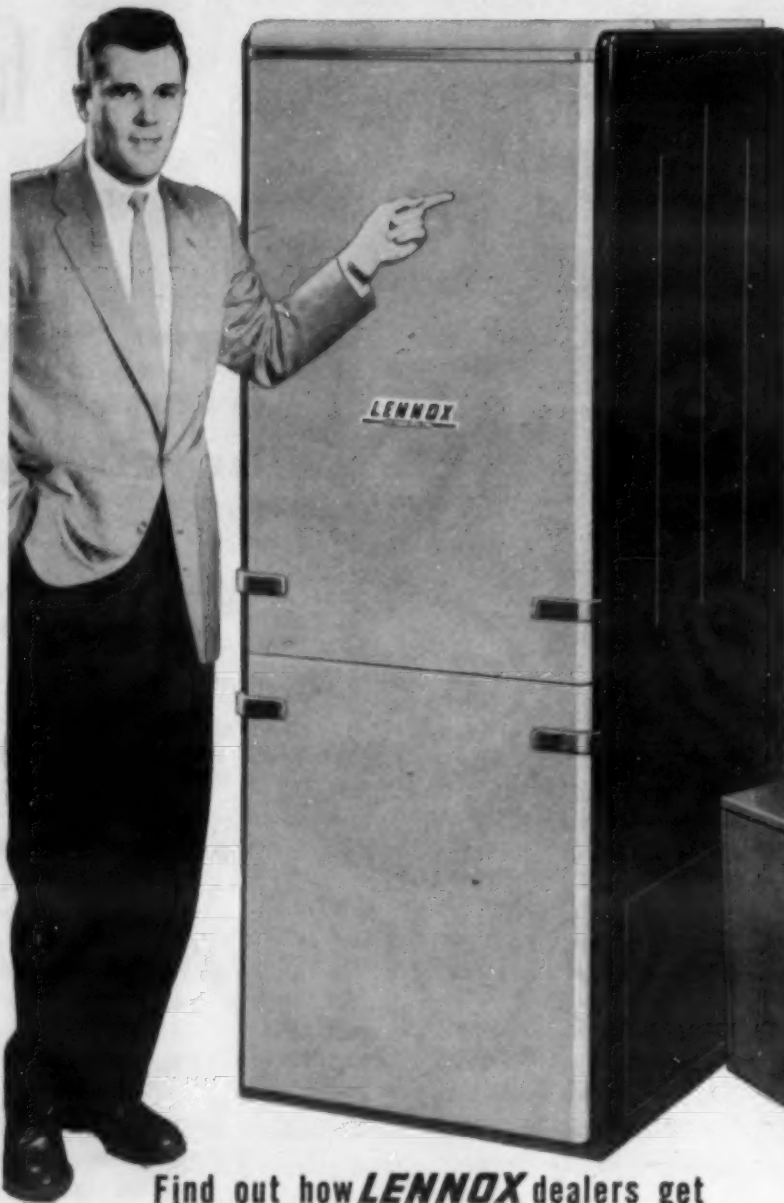
Factor

Factor	Direct Drive Adv.	Disadv.	Belt Drive Adv.	Disadv.
Current consumption		X	X	
Belts and pulleys	X			X
Space saving	X			X
Motor replacement & service		X	X	
Power factor		X	X	
Noise isolation		X	X	
Velocity pressure loss due to impact		X	X	
Tip speed noise		X	X	
Savings cost	X			X
Increase speed		X	X	
Decrease speed		X	X	
Shipping problems		X	X	
Vibration due to r.p.m.		X	X	
Rising curve characteristics	X			X
Housing jobs	X			X
Standard house applications		X	X	
Additional air conditioning		X	X	
Wiring large apartments		X	X	

Galaba cautioned against over He said more trouble was caused oiling the motor and bearings. (Concluded on next page)

LENNOX gives you

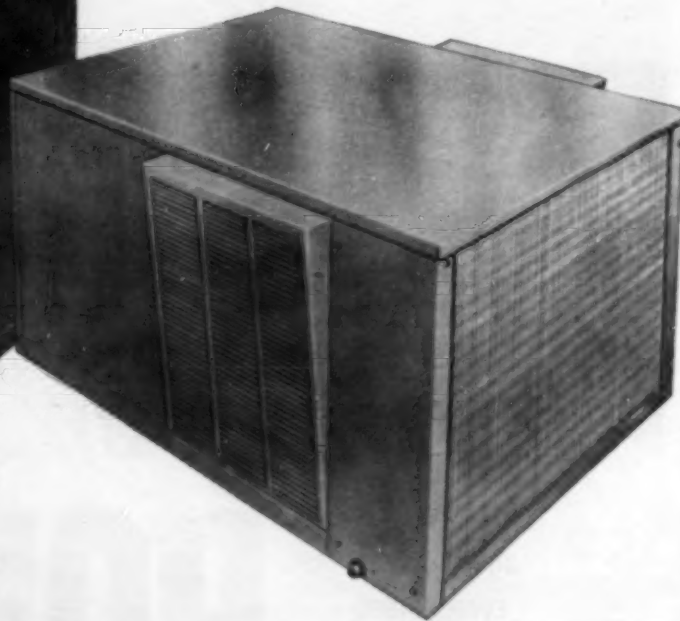
...and many selling advantages that can make your air conditioning sales go 'way up!



• If you're tired of running on a "treadmill" ... if it bothers you to see your competition waxing fat while you're handicapped by inadequate advertising, a short product line or lack of backing from the factory ... then take a good look at Lennox.

Here's a manufacturer with over 60 years experience in designing and building equipment for conditioning and distributing air for comfort. Its vast productive facilities spread from coast to coast—extend into Canada, too. You deal directly with a nearby factory. But perhaps even more important is the solid promotional assistance you'll get from Lennox.

No wonder the better dealers are looking to Lennox!



Find out how **LENNOX** dealers get MORE new home business

Lennox has a special sales program to help its dealers get volume sales—get the lion's share of new home business. Write for more information.

Isn't it time YOU switched to **LENNOX** air conditioning?

For more information about products advertised on this page use Information Center, page 26.

Tips on Blower Installations--

(Concluded from preceding page)

by too much oil than by not enough oil.

Filters, he said, should be put in as marked. They are generally marked for top and bottom, front or back, or with an arrow indicating direction of air flow.

He advised dealers to count on extra filters during new construction. He urged that filters be put in place during construction to keep the blower compartment clean. After construction is completed, replace filters.

Dirty filters, he declared, will not overload the motor. On the other hand, removing the filters may overload the motor if the motor is operating at its peak design. The blower blades get filled with dirt, thus lowering their performance, he said.

If the resistance is high, he said, the c.f.m. drops off, while if resistance is low, c.f.m. rises.

As filters get dirty, he explained, the c.f.m. drops and the resistance increases. But when the filters are removed, the resistance drops and the c.f.m. and hp. rises.

Comparing direct drive blowers with belt driven blowers, Galaba listed the advantages and disadvantages as shown in graph on preceding page.

In addition, there are now intra-drive blowers where the motor revolves around a shaft.

Advantages of intra-drive blowers are that they have a higher power factor (85%), higher capacity, better air distribution, better shipping characteristics, possible use for add-on air conditioning and heating, and no belts and pulleys.

Disadvantages are that they cost more, there are fewer sources for motor replacement, and limited top capacity.

Power Pole Thermostats Tip-off Midwest Utility On Summer Upped Conditioner, Refrigerator Loads

MINNEAPOLIS — To keep from blowing its fuse this summer as perspiring citizens switch on air conditioners and refrigeration units, one big midwest utility has installed thermostats on its power poles.

Purpose of this unusual application is not to heat—or cool—the outdoors, but to get advance tip-offs on temperature changes so the power company can better cope with the increased electrical demand.

According to officials at Kansas City (Mo.) Power & Light, July and August are now the months of heaviest electrical demand (it used to be the winter, especially Christmas).

Air conditioners combine with refrigerators, freezers, dehumidifiers, fans, and other anti-heat devices to boost electrical loads. In turn, this tended to cause a

voltage drop in the system unless compensated for.

Generally, this demand is met by switching on more transformer capacity—but the trick has been to determine precisely when to do this. Time clocks and other control devices proved unsatisfactory because they couldn't differentiate between hot and cold days.

The problem was solved by installing an industrial version of Minneapolis-Honeywell's household thermostat on the power poles. As the temperature rises, say to 75 or 80°, the thermostat automatically switches in more transformer capacity to meet the extra load demands. Conversely, as temperature drops, it cuts out extra capacity.

Two other western utilities are reported adopting this form of current control.

Air Conditioning Drawing People To Desert Area

PHOENIX, Ariz.—Air conditioning is helping attract new industry to this parched desert region stretching over most of Arizona, southern Nevada, parts of New Mexico, and south-eastern California.

With a population growth of 44% since 1950, people have discovered they like to live in the desert where winters are warm, sunshine abundant, and air conditioning eases summer heat.

Industry is attracted too, especially with an available labor market, and people in turn follow where there is industry.

Widespread use of air conditioning makes the searing desert temperatures of up to 120° F. easier to take.

"Everything in Phoenix is air conditioned these days," says Ralph Burgbacher, Sr., who moved here six years ago to get away from "smog and congestion in Los Angeles."

In his short stay here, Burgbacher has also practiced the "cult" of air conditioning. He has built over 400 houses and a like number of apartments—every one air conditioned. He's also put up a \$2.5 million medical center with air conditioned offices for 110 doctors.

Builder Burgbacher's own house and office are air conditioned—and so is his Cadillac.

Among the larger industries which have established plants in the area is Ford Motor Co.

Seattle Asked To Ok Cement-Asbestos Pipe For Plumbing Vents

SEATTLE — A recommendation for approval of the use of cement-asbestos pipe for plumbing vents was made by City Council's public safety committee over objections of the local plumbers' union and the Cast Iron Soil Pipe Institute, it was reported here.

The proposal, made by representatives of Johns-Manville Co., producer of cement-asbestos pipe, had been endorsed by the Seattle-King county public health department and the city's plumbing code advisory committee, it was noted.

John Bright, health department sanitation director, said the cement-asbestos pipe has been endorsed only for use as "dry vents" in plumbing work.

Grant A. Wood, Plumbers' union spokesman, contended the substitution would tend to lower plumbing standards. The cement-asbestos type, he claimed, would absorb moisture.

In urging that the proposal be rejected, Robert Duffey, district manager for the Cast Iron Soil Pipe Institute, also said the cement-asbestos has moisture absorption qualities.

City Councilman Alfred R. Rochester declared, "Even if it doesn't save a dime, and will do the job satisfactorily, I'm in favor of it. I've seen instances in the past where the introduction of new materials has brought sharper bidding with resulting savings."

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LENNOX Industries Inc.

—Established 1895

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Salt Lake City, Utah • Los Angeles, Calif. • Fort Worth, Texas
Decatur, Ga. • Des Moines, Iowa.

LENNOX Industries (Canada) Ltd., Toronto, Montreal and Calgary

The startling facts about the new Lennox Stowaway Air Conditioner, a scientific development that offers you...

Air conditioning throughout your home for cigarette money!

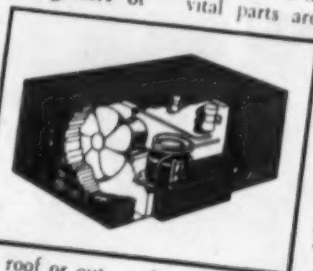
Out in Iowa corn country, where summers really get hot, far-sighted designers and engineers of Lennox Industries have tested and perfected a new kind of low-cost, central air conditioning.

Called the Lennox Stowaway Air Conditioner, it's a compact unit that can be "stowed away" in an attic, basement or crawl space; placed on a roof or outside of a home—yet so great is its capacity that it can cool off every room in an average-size home. It's easily installed in any home—particularly one with a forced warm air heating system, because it then uses the same ducts and registers.

And the cost of this new home air conditioner over the years you'll enjoy it? No more than you pay for cigarettes, even if your family smokes as little as two packs a day!

The Lennox Stowaway Air Conditioner is quiet, efficient, economical to operate and maintain. It's air-cooled, requires no plumbing or water tower; uses less power than any similar type of equipment. Refrigeration circuits are

100% hermetically sealed for life—just as in a kitchen refrigerator. All vital parts are fully protected from the weather.



A new air handling device called the Power Prop—a Lennox exclusive—delivers up to 25% more condenser air at 10% less cost than the ordinary "blower," with never a trace of vibration.

Two compressors assure a constant, comfortable temperature; and properly controlled humidity, even in 100° weather. One operates continuously for normal cooling; the other is on call for extra-hot days and nights.

No matter what type of heating equipment you now have, your Lennox dealer-expert can bring you whole-house cooling with the Lennox Stowaway Air Conditioner, available in two-ton, three-ton and six-ton sizes—all on the Lennox Easy Pay Plan. Look for your Lennox dealer in the yellow pages of your phone directory.

Lennox Industries Inc., heating and air conditioning, founded 1895; Marshalltown and Des Moines, Ia.; Syracuse, N. Y.; Columbus, O.; Ft. Worth, Texas; Los Angeles, Calif.; Salt Lake City, Utah; Decatur, Ga.; In Canada: Toronto, Montreal, Calgary.

More families buy LENNOX, through 5606 home comfort specialists

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I'd like to have more information about a Lennox dealership—including the story of how Lennox dealers get more of the new home construction money.

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Room Unit Sales Up 87% In Philadelphia Area

PHILADELPHIA — Distributor sales of room air conditioners continued during April the torrid pace they have set all year in the Philadelphia area, figures released by the Electrical Association of Philadelphia indicated recently.

April sales were 87% ahead of the same period of 1955. The distributors sold more than 18,000 units in the "pre-season" period.

April sales of clothes dryers showed strong gains, too, with a rise of 44% over last year.

Dishwasher sales jumped 39% and automatic washers 9%. Refrigerator sales for April, on the other hand, dropped 9%, electric ranges 21%, home freezers 55%, and non-automatic washers 14%.

For the four months, dryer sales gained 48%, dishwashers 45%, automatic washers 12%, and non-automatic washers 4%. Refrigerator sales declined 3%, ranges 11%, and home freezers 51%.

Unit sales comparisons were as follows:

	April 1956	April 1955	Total 4 Mos. 1956	Total 4 Mos. 1955
Electrical Appliance	1956	1955	1956	1955
Air Conditioners	4,634	2,475	18,720	9,459
Refrigerators	4,876	5,353	21,944	22,575
Home Freezers	401	894	2,082	4,267
Clothes Dryers	853	593	6,234	4,222
Dishwashers	636	459	2,631	1,812
Ranges	1,398	1,767	6,247	7,006
Washers, Automatic	4,103	3,749	19,454	17,412
Washers, Conventional	757	877	4,186	4,019

Room Unit Storage Plan Pays Off for Dealer



A WATT voltmeter checks the starting and running wattage of the Amana room air conditioner at Smulekoff's. A thorough checkup of each customer's unit, such as is being given here by Elmer Kelly, left, and Lee Usher, provides what is said to be trouble-free service during hot summer months.



AT Smulekoff's Furniture Store, Cedar Rapids, Iowa, Service Manager Lou Guelzko, left, and Morris Farr, check the service tag on an Amana room air conditioning unit to see what work has been done. Each tag lists customer's name, address, unit model number, and service report.



SERVICEMAN Elmer Kelly, having completed an installation at the office of a Smulekoff customer, inserts a new "Amana-magic" filter into the room air conditioner. Although replacements with ordinary filters are included in the service checkup, new Amana-magic filters come with additional charge. The store is using the storage checkup service to introduce the new activated charcoal filters.

THESE FACTS

are important to you!

Tecumseh

COMPRESSORS

are used in approximately 50% of today's year-round air conditioners

As a contractor, you can build customer confidence by installing a year-round air conditioner that features a Tecumseh compressor. True, there are other compressors in use today, but Tecumseh has developed the only complete line of hermetic compressors specifically designed for air conditioning. This means the manufacturer using Tecumseh compressors offers more to both you and your customers.

PINPOINT PERFORMANCE

Every current compressor advancement is designed into Tecumseh compressors to give full rated performance under the toughest conditions associated with air conditioning.

GREATER SAFETY

Each compressor has double the oil supply necessary for proper lubrication. This allows an extra safety factor on pull-down. Most important, it helps protect internal parts when the compressor is started after cold weather shutdown.

LOW NOISE LEVEL

All moving parts are held to close tolerance and are constantly lubricated. Internal or external spring mountings resist vibration. Result — smoother, quieter operation.

COMPACT DESIGN

The popular answer in compressor design to meet the public demand for more cooling and smaller air conditioners, saving valuable floor space for other uses.

FULL HERMETIC

Outside causes of failure are eliminated by providing a foolproof hermetic seal. Suction gas cooling within stamped steel shell dissipates motor heat and effects cooler operation.

LOW INITIAL COST

Constant demand for Tecumseh compressors has kept prices down. The savings are reflected in the cost of the air conditioner, plus the many "extras" that are standard equipment.

FREEDOM FROM SERVICE

Tecumseh's superior operation has resulted in the lowest percentage of field returns under warranty for a complete system. Result — fewer service calls, saving you and your customers time and money.

Put Tecumseh's 22 years of experience in producing over 25,000,000 compressors to work for you. See that your year-round air conditioner has a Tecumseh compressor. It works wonders in building a list of satisfied customers!



The World's Largest Producer of Air Conditioning Compressors

TECUMSEH PRODUCTS CO.

Tecumseh, Michigan
Marion, Ohio

Promote Room Unit And Filter Sales by Winter Storage

CEDAR RAPIDS, Iowa — A winter service and storage offer is paying off now in increased sales of room air conditioners for Smulekoff's Furniture Store here.

When a customer buys an Amana air conditioner, Smulekoff's includes a special winter service and storage offer as a part of the sale. For \$20, Smulekoff's agrees to pick up the air conditioner in the late fall, clean it, give it a complete check-up, store it until spring, and then re-install it.

The storage program now is serving as a door opener that enables Smulekoff's to talk to customers about additional room air conditioners.

In addition, when the unit is being re-installed, the store's representative promotes the new Amana activated charcoal filter, as a replacement for the glass fiber filter that was standard equipment in previous years.

Customers have accepted the storage check-up service enthusiastically, and they have responded well to the filter promotion, it is reported by Nathan Berg, the store's home appliance manager.

"Other advantages of the activity," he says, "are 1) It eliminates the winter storage problem of room air conditioners which is a sales objection for some customers.

"2) The storage and check-up service helps us to keep our service personnel busy at a normally slack time.

"3) We can double up on our storage space, since the winter storage units are stored in the same bins that hold new units during the peak selling season."

'Wall of Conditioned Air' Makes President Comfortable In Texas

WACO, Texas — A unique "wall of conditioned air" assured President Eisenhower's comfort when the chief executive appeared at convocation ceremonies held recently at Baylor university.

The Heart-O'-Texas Coliseum scene of the ceremonies, lacks climate-control equipment and is apt to be unbearable in the spring heat.

To insure the President's comfort, the speaker's platform at the huge hall was equipped with a "spot" air conditioning system by Carrier Corp.

"In all, the air conditioning supplied complete comfort for over 100 people on the platform," John Gillham, manager of Carrier's Unitary Equipment Division Dallas office, revealed.

"To do the trick, the Carrier installation confined cooling to the platform area, virtually placing a blanket of air conditioned air over the particular location," Gillham explained. This application is believed to be the first of its kind, he said.

Two Carrier self-contained "Weathermakers" furnished a total of 20 tons of cooling. Located near the front on both sides of the 60-ft. stage, the units provided a flow of cool air throughout the 1,500 sq. ft. of platform area.

Farm Expert Doane Suggests Cattlemen Air Condition Barns

MEMPHIS—Howard Doane, a St. Louis agricultural expert, recently suggested that cattlemen air condition their barns.

"Northern cattlemen have literally spent billions keeping their livestock warm, but have put out practically nothing to keep them cool," Doane told the Memphis Agricultural Club.

Doane, chairman of the board of Doane's Agricultural Service at St. Louis, said research has shown that steers will gain 3 to 3½ lbs. per day during April and May, but will gain only ½ lb. during the hot summer days in July and August.

Capitol To Be Cooled

LITTLE ROCK, Ark. — A high-velocity double-duct air conditioning system is included in the plans for the new Justice building to be erected on the State Capitol grounds here. Estimated cost is \$1,350,000.



Increase COOLING TOWER EFFICIENCY With
ASPIR-JET

Aspir-Jet, the new spray nozzle, increases efficiency of cooling towers by increasing water break-up and improving water distribution. This is accomplished by the Aspir-Jet unique design which atomizes the water with as little as one-half pound nozzle pressure. Formed of butyrate plastic, Aspir-Jets last longer because they do not corrode. Thousands already in use are giving better cooling even with lower than normal pressures.

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Tool Engineers' Study Shows

Automation Believed Unlikely for Most Of Conditioning, Refrigeration Industry

DETROIT—The heating, ventilating, air conditioning, and refrigeration industries appear to be highly interested in the possibility of automation but are not too hopeful of finding the types of equipment suitable to the industry's operations.

This was revealed by the American Society of Tool Engineers following completion of a national study of automation.

The industry believes, for instance, that about 40% of its production welding operations and 30% of its materials handling operations are automatable, but does not believe that any sizeable proportion of this automation can be achieved by converting equipment.

While a certain amount of

automation can be achieved, it is believed, by modifying present equipment, opinion as to whether such a procedure would pay for itself is divided about 50-50 in the industry.

In contrast, about 90% of those replying indicated that the right kind of new automated equipment would pay for itself.

Incidentally, the industry estimates that about 15% of its metal forming, grinding, finishing, and inspection operations can eventually be automated, plus about 20% of its machining.

Indicating the industry's difficulty in locating the type of automated equipment most suitable to its needs, only about 10% of new purchases will specify automation in 1956.



McQuay residential air conditioning components

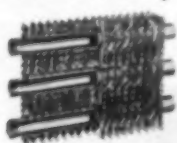
ADD LOW COST COOLING TO FORCED AIR FURNACES



McQuay Residential Aircons are designed for remote installation and provide waterless condensing with Freon 12 or Freon 22 compressors. Three sizes match 2, 3 and 5 hp compressors. Aircons have thermally protected motors and low speed centrifugal fans for quiet operation. Space is provided in the cabinet for mounting a compressor and receiver.

McQuay Horizontal and Vertical Residential Evaporators are available in 2, 3 and 5 ton sizes for Freon 12 or 22. Horizontal model mounts in ductwork on return or discharge side of furnace. Vertical airflow model installs in plenum of either conventional or counterflow furnace. Both models are designed for internal mounting of expansion valve.

A new McQuay Residential Evaporator and Residential Aircon are now available to meet the demand for low cost central cooling in existing and new home construction. Furnace filters, blower and ducts combine with a McQuay Evaporator to provide clean, cool, de-humidified air to all rooms. The McQuay Aircon, in which you may mount your compressor and receiver, handles the refrigerant condensing with a minimum of piping and without the use of water.



McQuay Ripple-Fin Coils—Both evaporator and condenser in this residential system are built around a McQuay Ripple-Fin Coil. Rippled aluminum fins assure thorough air cooling by prolonging the air contact with the cooling surface. The McQuay design also staggers the copper tubes to increase this effect.



McQuay Inc.

Representatives in major cities

1600 Broadway N. E., Minneapolis 13, Minn.

For more information about products advertised on this page use Information Center, page 26.

Greater Control, Use of Outdoor Air Seen as Way to Better, Less Costly Air Conditioning

NEW YORK CITY—Better control and increased intake of outdoor air would greatly improve air conditioning, and cut operating costs, contends Henry Wright, building consultant.

It could mean "spring all year-round," he declares in an article under that title in a recent issue of *Architectural Forum*.

Making 'Sealed Building' Idea More Acceptable

Design and control of systems would be based on the "comfort zone concept of air conditioning control," which Wright says "offers real promise of making the 'sealed building' idea more acceptable."

He explains how this would work:

"First, heating equipment would be controlled with a standard thermostat set at about 73°, as at present. This thermostat would have no function except to turn the heating element or medium on or off, or modulate its flow within a narrow resulting indoor temperature range.

"Second, a separate, preferably modulating thermostat would control ventilation-for-cooling on a year-round basis. The effort would be not to maintain an absolutely constant temperature but to prevent real overheating—due to solar, lamp, or occupancy loads—by the ad-

mission of sufficient amounts of outdoor air whenever this air was capable of doing the cooling job. This thermostat would function between about 74° and 76° or 77°.

"Third, an effective temperature thermostat would control the cooling equipment, operating at a series of combinations of temperature and humidity close to the upper limit of the comfort zone, and thus eliminating over-cooling.

"Preferably," Wright says in the *Forum* article, these three sensing instruments would be housed in a single case, with some means of altering the setting of the entire series towards 'warmer' and 'cooler' without

disturbing the interrelationship of their separate settings."

Occupants of "sealed," air conditioned offices are usually disappointed with air conditioning except during the hottest summer weather, and during spring usually want to open the windows, he declares.

Properly Designed System Would End Desire To Open Windows

As for "the householder lucky enough to own a room cooler or central air conditioner . . . it never occurs to him or anyone else that he should operate his cooling equipment when it is perfectly comfortable outside, and when merely opening the windows make it equally comfortable—and fragrant—indoors as well," points out Wright.

"The answer to the 'I want to open the window' argument is that a properly designed air

conditioning system can be just as capable of admitting lavish amounts of outdoor air as a window, and of doing so automatically and to precisely the degree called for by outdoor and indoor conditions—which in cool and mildly warm weather means: to a very great degree."

Outdoor air could be used for cooling in winter as required, in spring and fall, and for night "purging" in summer except during the hottest weather, Wright believes.

Comfort Zone Discussed

Devoting considerable space to that much discussed subject—the comfort zone—Wright says "there is a direct connection between the comfort zone concept and popular dissatisfaction with air conditioning results. Air conditioned spaces, as comfort air conditioning is presently controlled, invariably feel cooler than the outdoors, whenever the outside temperature is above about 75°.

"Since much of the time the temperature outdoors is above this point without seeming uncomfortably warm, it is inevitable that continuous air conditioning will be considered 'overdone' in such weather."

The comfort zone, Wright points out, lies between a minimum of 73° in winter and an "effective temperature," as defined by ASHVE, of 73° to 74°.

"The upper level of the comfort zone is, in fact, a series of combinations of temperature and humidity each being equally tolerable at a given activity level," he explains.

Trying to control this combination of temperature and humidity by a conventional thermostat which cycles cooling equipment in response to temperature variations only is not satisfactory, Wright says.

Control Should Be Temperature, Humidity Sensitive

While satisfactory control can be obtained through re-heat, Wright thinks a "simpler and better" solution is an effective temperature thermostat "simultaneously sensitive to both temperature and humidity."

"Such instruments are commercially available, but will probably need fundamental improvement and simplification before they achieve wide use.

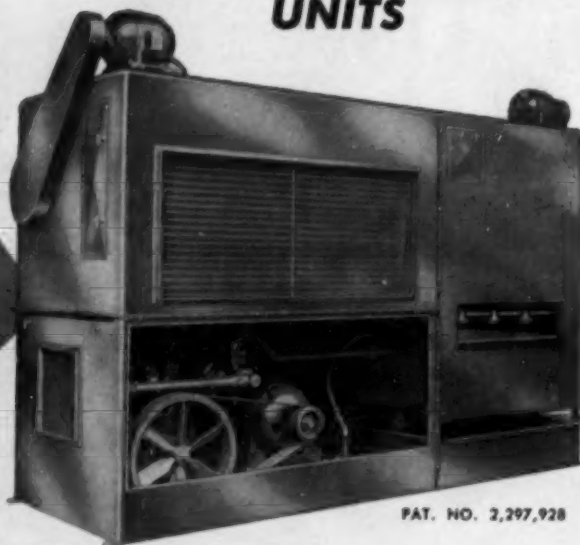
"Experiments with such devices prove that they permit, first of all, maintenance of a much warmer summer condition than is ordinarily considered necessary, with a corresponding saving in operating cost.

"They also eliminate unnecessary contrast between indoor and outdoor conditions on days which are fairly comfortable outside, and greatly reduce the characteristic 'long cycling' experienced in humid weather with ordinary thermostats."

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1 TO 50 TONS 2 TO 8 ROWS

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Mild Radiation Can Extend Life of Refrigerated Foods Up to 10 Times

But Problems of Cost, Taste, Color, Flavor, Texture In Heavy Radiation Bars Full Commercial Radiation Sterilization Soon

NEW YORK CITY—Mildly irradiated foods as an aid to extending refrigerated life of food or kill insects on it may appear on grocers' shelves within four to six years, according to a recent round-up of scientific opinion on the subject.

Radiation Sterilization Not Seen for Many Perishable Foods

But perishable food products completely sterilized by atomic radiation for commercial use isn't seen by the experts for some years—probably eight or 10. And even then, it was noted, some wonder whether the process of complete radiation sterilization will be used to treat very many foods.

Commercial use of radiation for full sterilization of foods faces some formidable barriers, according to the experimenters. Chief among these are the problems of taste and cost.

Heavy Sterilization Causes Objectionable Changes In Many Foods

Heavy dosages of radiation are required for complete sterilization, it was noted, and these cause objectionable texture, color, and flavor changes in many foods.

One of the laboratories which found this to be true was that of the American Can Co. It concentrated its research on those foods which are sensitive to heat sterilization, such as asparagus, broccoli, Brussels sprouts, cabbage, spinach, green beans, orange juice, and some meat items, the report stated.

Dr. Roger Lueck, vice president in charge of the can company's experiments is quoted as saying that "with these heat-sensitive foods, we're getting changes in color, flavor, and texture that are fully as great or greater than those which occur with thermal sterilization."

Radiation Sterilization Seen as More Costly

He notes that American Can feels there's no point in using radiation to sterilize foods which are being conventionally heat-treated without adverse flavor, or texture effects, because "for a long time to come radiation sterilization will be more expensive than thermal sterilization."

Cost data from actual food irradiation operations will be

obtained from a pilot plant which the Department of the Army in cooperation with the Atomic Energy Commission plans to put into operation in 1958. Its capacity will be 1,000 tons of food a month. (This was reported in the Feb. 20 issue of AIR CONDITIONING & REFRIGERATION NEWS this year).

Thermal energy of 2.5 to 4 million reps (a unit of radiation measurement) is required to completely sterilize foods for self storage by atomic radiation to the same degree that commercial canned foods are today sterilized, it was explained.

And directly opposite to the effects of thermal energy, it

takes quite a bit more irradiation to inactivate food enzymes than it does to destroy bacteria, it was added. Enzymes are natural catalysts of processes that cause off-colors, odors, and loss of texture. Some are not completely inactivated after dosages of 10 million reps, it was pointed out.

In contrast to the high radiation dosages necessary for full sterilization, mild pasteurizing doses from 50,000 to 500,000 reps will extend the refrigerated storage life of meats and other fresh and cooked foods as much as 10 times. Dosages of 2,000 to 50,000 reps will make pork safe for consumption without the

danger of trichinosis and also destroy insects in cereal and grain products, the experiments showed. Doses of 10,000 to 15,000 reps will inhibit potatoes from sprouting.

Dr. Henry R. Kraybill, vice president and director of research and education of the American Meat Institute Foundation says that use of low radiation doses of 50,000 reps, without causing any off-flavors, odors, or color, enables the "refrigerated life of fresh beef to be extended about fivefold."

Col. William D. Jackson, chief of the Quartermaster Corps research and development office also notes that "in the area of

ready-to-bake goods, irradiation may drastically reduce or eliminate the necessity for refrigerated handling."

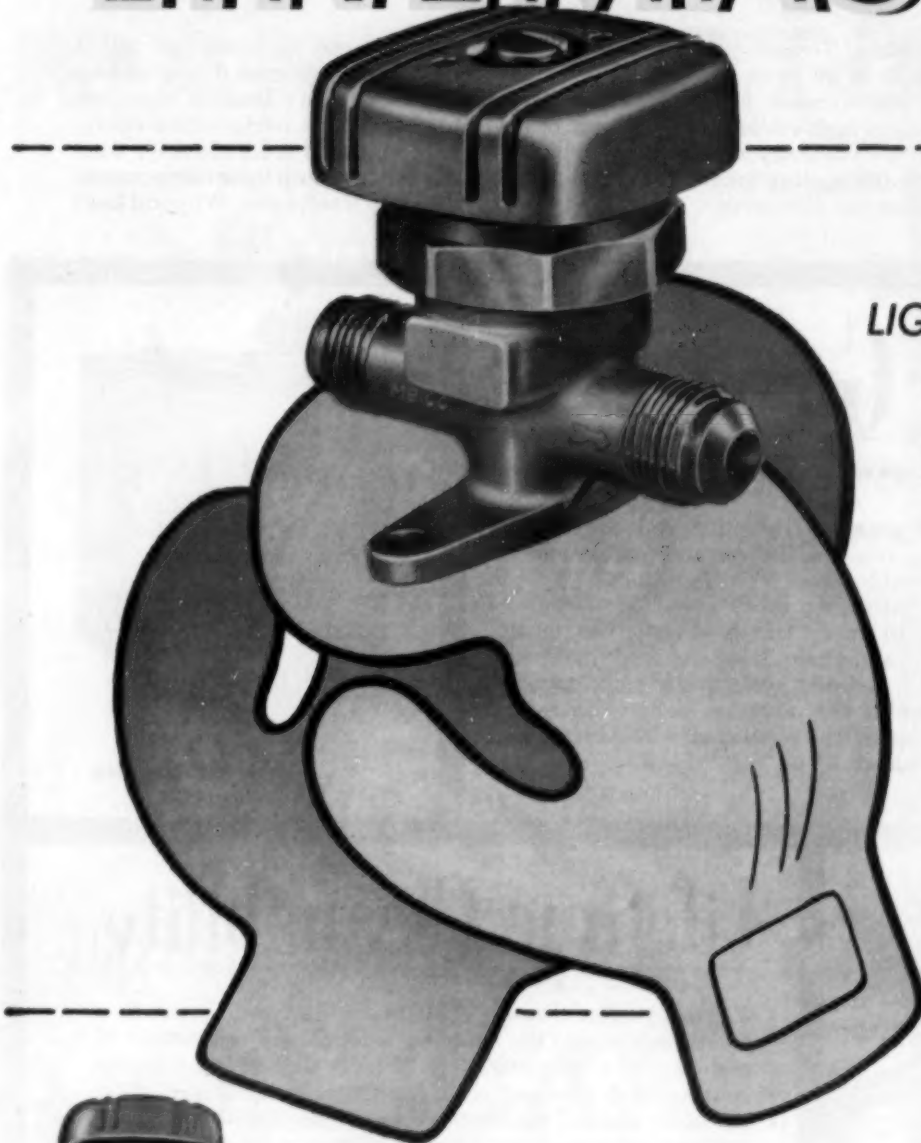
FDA, Surgeon General Approval May Take Time

But even if such use of radiation appears to be feasible now, one big deterrent will prevent it from being used commercially in the food field for some time, the report continued. That's the necessity for approval first from the Food and Drug Administration and the U. S. Surgeon General that irradiated food is safe to eat.

All experiments thus far have indicated that irradiated food is not harmful, experts point out. But scientists think it will be at least a couple of years before either the FDA or the Surgeon General gives across-the-board sanction of irradiated food for consumption by humans.

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LINEMASTER



THE NEW
LIGHT HEAVYWEIGHT
CHAMPION OF
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SUPER-SEALING

A phosphor bronze diaphragm between two stainless steel diaphragms gives the LINEMASTER an unbeatable combination for super-sealing and long life. Diaphragms pressure wear tested for thousands of openings and closings without failure.

SUPER-SEATING

In the LINEMASTER, tough, resilient molded nylon seat disc insures positive shutoff even if foreign material is lodged against the seating surface. Mueller Brass Co. pioneered and proved the superiority of nylon for "super-seating".

The simple design and sound engineering of this compact forged brass LINEMASTER make it a real heavyweight among "shorty" diaphragm valves. These new LINEMASTERS are solid brass construction throughout . . . even to the comfortable, square design handwheel. Flow passageway is streamlined to eliminate turbulence and provide full-flow. Exclusive triple diaphragms of phosphor bronze and stainless steel furnish seep proof sealing and excellent wear resistant properties. A tough, resilient nylon stem disc operating against a precision finished seat assures positive shutoff. Five straight-thru and angle type LINEMASTERS with flare, solder, and M.P.T. end connections are available. Never before has such a compact valve embodied so many good sound engineering features and been built to such high standards of quality. The LINEMASTER is really a light, heavyweight champion. See the popularly priced LINEMASTERS at your wholesaler's . . . and judge for yourself.

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Keep them in stock. Servicemen will pick up adapters and motors, carry them in their cars, and complete service on the job in one call. Eliminates delay of having motors away for rebuilding. Adapters are easy to install, fit any base. No motor shaft too long or too short. They also bring you more sales in motors, belts, pulleys, controls, etc.

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For more information about products advertised on this page use Information Center, page 26.

Product Knowledge, Protective Maintenance, Trouble-Shooting, Adjustment, Repair of Electric Motors (1)

In the adjoining columns, the NEWS presents the first instalment of a discussion by T. N. Schierloh, service technical manager of General Motors' Delco Products Div., on servicing refrigeration and air conditioning motors. A comprehensive treatment of the subject, the material has been presented before RSES groups.

By T. N. Schierloh, Service Technical Manager,
Delco Products Div., General Motors Corp.

When we consider electric motors used in the refrigeration industry, one of the first things that becomes evident is the evolution of the motor from a comparatively large and simple mechanism with rather liberal mechanical, electrical, and noise tolerances, to a complex group of specialized motors built to specifications of size, mechanical tolerances, and quiet, efficient performance unheard of only a few years ago.

We have watched the progress

of commercial mechanical refrigeration from a simple compressor, usually remotely mounted and easily accessible—to a compact and complex air conditioning machine incorporating several types of specialized motors governed by intricate and sensitive control devices.

We are now working with railway applications where we are required to know not only the science of mechanical refrigeration, but diesel power,

electric generators, and the allied control equipment.

The user of mechanical refrigeration has also undergone a change, it seems. We remember him as a comparatively calm individual who was not overly disturbed or upset when trouble occurred. Now he is an apparently highly neurotic character who is firmly convinced that his problem takes priority over anything else in the world.

What I am leading up to is just this: We are now most definitely out of the "tinkerer"

or "home-grown mechanic" stage of refrigeration service. It is now an exacting science requiring an intimate understanding of all the many aspects of the business whether they be

mechanical, electrical, economical, or, even psychological.

The refrigeration service engineer has really "come into his own" and the very progress of the industry will be in direct proportion to the quality and quantity of service he renders.

In order to "hold his own" therefore, a service engineer must continually keep abreast of all developments in the components of the equipment. For that reason I would like to share a few of our observations with you concerning one of the most vital components of the system—the electric motors.

Categories of Training For Service Engineer

In order to be qualified to properly approach any service problem, the service engineer must train himself as a doctor (which indeed he is) and, like a doctor's, his education will fall into four general categories:

1. Anatomy and physiology (product knowledge).
2. Hygiene and health (protective maintenance).
3. Diagnosis (trouble shooting).
4. Therapy and surgery (adjustment and repair).

Let's consider the first category—motor anatomy and physiology. Here our studies will tell us how, and why, motors are made the way they are—what they are supposed to do and what their limitations are. This is what we call product knowledge and without this basic prerequisite we cannot presume to be qualified to proceed to the remaining three requirements for a service engineer.

Let us, therefore, just briefly consider the anatomy fundamentals of some of the more important motors in refrigeration and air conditioning equipment.

The basic alternating current motor (Fig. 1) is the squirrel cage induction motor consisting of a stator with windings embedded in the slots of the laminated steel core, and a rotor with conductor bars and end rings in the pattern of a squirrel cage.

The schematic circuit of a simple induction motor is shown in Fig. 2 for a single-phase motor, and Fig. 3a and Fig. 3b for a polyphase motor.

Unfortunately, a motor using single-phase current is like a
(Continued on next page)

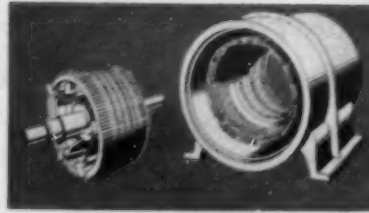


FIG. 1—Basic alternating current motor.

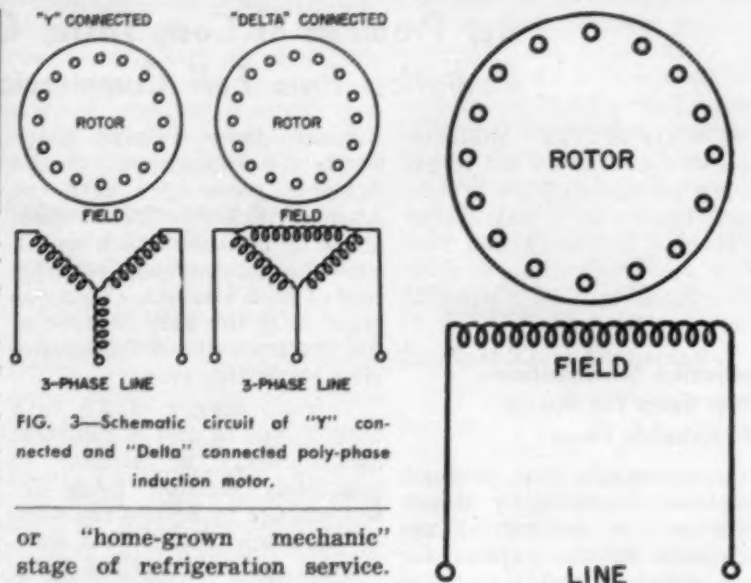


FIG. 3—Schematic circuit of "Y" connected and "Delta" connected poly-phase induction motor.

FIG. 2—Schematic circuit of single-phase induction motor.

HM THE ONLY Matched

COOLING TOWERS and CONDENSERS

The Halstead & Mitchell Cooling Towers you select are matched by design to work with the famous Halstead & Mitchell water-cooled Condensers. You need no longer buy a high-efficiency cooling tower to work with a low-efficiency condenser (or vice-versa) . . . a long-life cooling tower to work with a short-life condenser (or vice-versa).

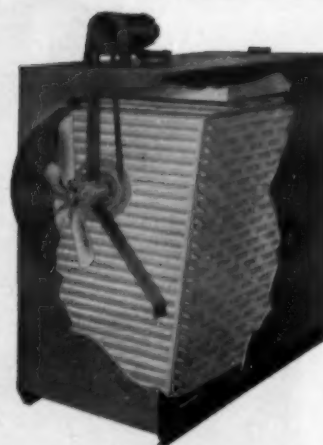
Remember that every cooling tower you sell is planned to work with a water-cooled condenser—then you'll see why America's leading manufacturers of air-conditioning and refrigeration equipment have swung to Halstead & Mitchell for their original equipment needs in both these components. With cleanability you'll sell more. Why sell less?

20-Year Guarantee!

on the wetted deck surface against rotting or fungus attack

Only Halstead & Mitchell pressure-cresoting can provide a guarantee against immediate attack by fungus and marine parasites . . . or chemical deterioration from acids in water.

Added to this H&M exclusive are other major advantages. There's ultra-high efficiency in the gravity-type water distributing pan which eliminates extra pumping head required on spray type towers . . . and cuts down on water losses due to "atomizing" of water. And there's extra-long life in stainless steel fans . . . and sheet steel cabinets hydraulically painted with vinsynite, vinyl zinc and chlorinated rubber.



2 thru 120 TONS



1/3 thru
25 TONS

Lifetime Cleanability

The mechanical cleaning of H&M double-tube, counter-flow condensers means the simplest, least dangerous method of restoring new unit efficiency. Whether removing a heavy coating of sludge and scale, or a thin insulating film on the inner walls of the copper tubing, the mechanical cleaning tool restores heat transfer efficiency in a matter of minutes. The result is lowered discharge pressures . . . more heat carried off by cooling water . . . lower bills. Only the impurities are removed . . . the thickness of the copper wall remains intact, and the condenser gives extra years of peak service.

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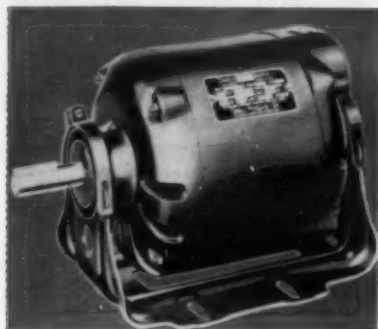


FIG. 4—Splitphase single-phase motor.

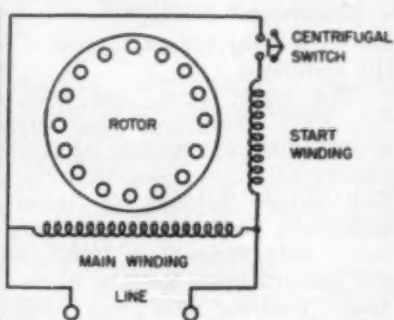


FIG. 5—Induction motor with two distinct, distributed windings, one for starting and one for running conditions.

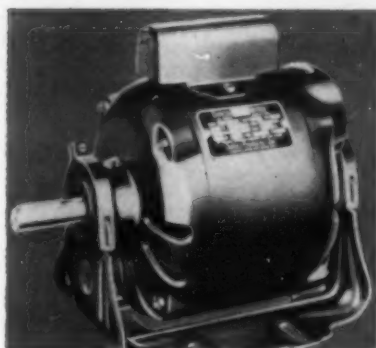


FIG. 6—Picture of capacitor-start motor.

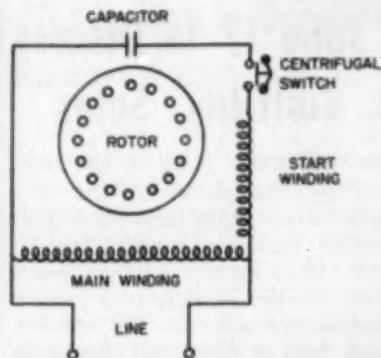


FIG. 7—Schematic circuit of start winding.

(Continued from preceding page) one-cylinder steam engine on dead center. Such a motor can not start unless you give the shaft a twist. In practice, all such single-phase motors are designed with some special device to act as a "starter."

Polyphase motors, on the other hand, are like a multi-cylinder engine and have the ability to start themselves. They are the simplest and most trouble-free of all commercial motors.

Since we are going to be concerned mostly with single-phase motors, I think it would be worth while to review the more important types and, since it has an important bearing on service, the method used for starting each type.

The oldest type of single-phase motor in commercial use is the splitphase. (Fig. 4.) Here we have an induction motor with two distinct, distributed windings; (Fig. 5) one

for starting and one for running conditions.

The phase or starting winding, magnetically displaced from the main or running winding, is disconnected from the line when the motor reaches a predetermined speed. Disconnecting the start winding is accomplished

by an internal, centrifugally operated switch or by an external thermal or magnetic relay.

Split-phase motors have the advantage of constant speed operation under varying load conditions. High breakdown torque with resultant overload capacity is also an important characteristic. Application of split-phase motors is limited, however, by the high starting current and relatively low start-

ing torque of the motor.

The capacitor-start motor (Fig. 6) was developed to overcome the shortcomings of the split-phase motor. (Fig. 7.) The running characteristics are the same, but a capacitor in series with the starting winding has the effect of lowering the starting amps and increasing the starting torque.

(To Be Continued)

L.O.F. Glass Fibers Names Frick to Post

SYRACUSE, N. Y.—George R. Frick recently was appointed district sales manager of newly-created Syracuse area for L.O.F. Glass Fibers Co.

Realignment of districts in western New York and western Pennsylvania was carried out to increase the firm's sales effectiveness in the area, according to J. M. Johns, vice president and sales director.

Part of the eastern region, the Syracuse district covers 50 counties outside the New York City area.

To Build Cooled Motel

TOLEDO—Details of a \$400,000, 50-suite motel with air conditioned dining room, and individually-controlled air conditioning and heating equipment for each suite, were announced.

4 Topics To Feature ARW Regions 7,8 Joint Meeting June 22-23

DENVER—A joint meeting of Regions 7 and 8 of the Air Conditioning & Refrigeration Wholesalers will be held June 22-23 at the Albany hotel here.

Registration is scheduled for Thursday afternoon, June 21.

On Friday morning, there will be a group breakfast, separate closed meetings of the two regions, and a joint educational meeting. A golf tournament is planned for the afternoon. A cocktail party and dinner-dance will be held in the evening.

Scheduled for Saturday is a chartered bus trip to Estes Park.

Speakers for the educational session Friday morning and their subjects are:

Joseph C. Hoopes, Kinetic Chemicals, "Room Air Conditioning Survey"; L. C. McKesson, Ansul Chemical Co., "Selling and Salesmanship"; Arley Baker, Alco Valve Co., "Your Profit or Loss"; and E. L. Tramposh, ARW president, speaks on "Service."

The meeting committee includes H. R. McCombs, Wallace Henry, and Carl Ruegg. The educational program was arranged by Starr Hull, ARW executive secretary.

All who plan to attend the meeting are urged to write to H. R. McCombs, McCombs Supply Co., 1819 Wazee St., Denver 17, Colo., advising him of the events they plan to participate in so that advance commitments can be made. Hotel reservations should be made directly with the Albany hotel here in Denver.

REFRIGERATED EQUIPMENT MANUFACTURERS

If you have an old or a new application problem, do what more and more manufacturers are doing:

Equip with dependable

AMERICAN MOTORS

HERMETIC CONDENSING UNITS, COMPRESSORS AND REFRIGERATION SYSTEMS

More and more major manufacturers of household refrigerators and freezers . . . frozen food cabinets and display cases . . . beverage and water coolers . . . commercial storage and display cabinets of all kinds are changing to American Motors equipment.

Yes, in every field*, refrigerated equipment manufacturers have found American Motors a most dependable

source of supply.

If you are manufacturing or plan to manufacture any kind of refrigerated product, our Sales Engineers are at your service.

They can provide you with the exact compressor, condensing unit or refrigeration system to best fit your needs. Why not phone or write today!

*Biological cabinets, laboratory equipment, self contained truck units, milk coolers, egg coolers, beer handling equipment, refrigerated vending machines, etc.

American Motors Corp.

Detroit 32, Michigan



SPECIALISTS IN REFRIGERATION SINCE 1914

CONTRACT DEPT.
KELVINATOR
DIVISION

For more information about products advertised on this page use Information Center, page 26.

NARDA-Mart Meeting June 17 to Discuss Promotions, Kitchens, Built-Ins, Sales

CHICAGO — A major get-together for some 200 dealers, manufacturers, and distributors has been planned by The Merchandise Mart and the National Appliance and Radio-TV Association for Sunday, June 17.

Discussions will cover sales promotion and traffic-building, kitchens, built-ins and builder sales by dealers, industry problems, and salespower.

Don Gabbert, NARDA president, will serve as general chairman of the day.

Registration will open in the Merchants and Manufacturers Club on the second floor of The Merchandise Mart at 9 a.m. The Mart will serve as host to the industry people, providing the meeting facilities, luncheon, and

cocktail party later in the day.

First discussion of the day will be on sales promotion and traffic building, starting at 10 a.m. Mort Farr, NARDA Chairman of the Board, will give a half-hour talk on the subject and lead a 45-minute audience participation period.

At 11:30, a talk on "Kitchens, Built-Ins, and Retailer Builder Sales" will be given by Bob Hopkins of Hopkins-Smith, Hollywood, Fla., a member of NARDA's kitchen committee.

Luncheon will be served in the Merchants and Manufacturers Club.

Two manufacturers, distributors, and dealers will talk briefly on "Industry Problems" and then will conduct a round table

discussion on how these may best be solved.

Participants in this panel will be: Leonard F. Cramer, executive vice president, The Magnavox Co.; Jack Sparks, general sales manager, Whirlpool-Seeger Corp.; Thoben Elrod, Thoben Elrod Co., Atlanta; Marvin Joyner, Modern Distributors, Inc., Oklahoma City; George Johnston, Johnston's, Minneapolis; and Harold Witham, Witham's, Bakersfield, Calif.

At 4 p.m., NARDA's immediate past president, H. B. Price, Jr., will present his views on "Salespower," covering methods of securing, training, compensating, and motivating salespeople.

He will suggest methods of making them more productive and will propose techniques of reducing costs per sale. After an audience discussion on this topic, the cocktail party will be held in the M & M Club.

Bush Stockholders To Vote on Merger--

(Concluded from Page 1)
moves for further expansion of the company.

"For some time," he said, "we have recognized that air conditioning and heating are becoming so interrelated that the best future belongs to those companies prepared to serve the entire field. Since C. A. Dunham Co. manufactures heating items, their products effectively complement our line of air conditioning and refrigeration equipment."

C. A. Dunham Co. owns plants at Michigan City, Ind.; Marshalltown, Iowa; and subsidiary companies with plants in Toronto, Ont., Can. and London, England.

"Our long-range plans have always envisioned plant facilities in the middle west and Canada, so the Dunham plant

locations fit logically into our blueprint for expansion," Boling stated.

Detailing the proposed consolidation, Boling revealed that the new company will have a total authorized common stock of 1,500,000 shares of \$2 par value.

The present preferred stock of C. A. Dunham Co., consisting of 3,761½ shares outstanding of 5% cumulative preferred stock, \$100 par value, will be changed into 5% cumulative preferred stock, \$100 par value in the new company. All Bush preferred stock has been redeemed.

How Shares Would Be Divided by Each

C. A. Dunham common stockholders will receive one share of Dunham-Bush, Inc. common stock for each share of C. A. Dunham stock now held by them, or a total of 527,445 shares.

Bush common stockholders will receive 3½ shares of Dunham-Bush, Inc. common stock for each share now held by them, or a total of 460,271 shares. The total issued common stock of Dunham-Bush, Inc. will be 987,716 shares.

Projected Annual Sales Near \$24,000,000

Based on projected balance sheet figures as of Sept. 30, 1956, the net worth of Dunham-Bush, Inc. (consolidated) will be approximately \$8,100,000 making the book value per common share approximately \$8.20.

Based upon projection of present operating data, Dunham-Bush, Inc. (consolidated) will have annual sales of approximately \$24,000,000 and net income after taxes of approximately \$1,300,000, or \$1.31 per common share.

It is expected that the new company will pay an annual dividend of 60 cents per common share, or the equivalent of \$2.10 per share on Bush shares now held.

"The consolidation of Bush and C. A. Dunham Co. will provide greater over-all financial strength, more flexible use of working capital, needed manufacturing facilities, better and more economical sales coverage, broader diversification of products, and more research and development; in fact, a wider over-all scope of operations," Boling stated.

Expect Substantial Savings In Overhead

"Substantial savings in overhead should result from integration of management, sales, engineering, accounting, and purchasing. Also, there will be substantial savings in freight charges to both the company and its customers," he concluded.

The plan of consolidation calls for a board of directors of eight members with H. S. Marshall, now president of C. A. Dunham Co., to be chairman of the board and Cecil Boling, president and treasurer of Bush, to be president and treasurer of Dunham-Bush, Inc. Other operating officers will be chosen from the two companies.



Now, you can handle any drying job if you stock just 4 Ansul Dryers and 8 Fittings

There isn't a drying job going that you can't handle with the Ansul line. What's more, you automatically cut your dollar investment in truck stock when you standardize on this advanced line. Equally important, you save valuable time by eliminating trips to pick up parts.

Once one of the 8 Ansul T-Connectors is permanently placed in the liquid line, you can install any one of the 4 Ansul T-Flo Dryer Cartridges (see above). These twelve parts give you 32 possible installation combinations. The T-Connectors are available in ¼", ½", ¾" and 1" sizes for both flare and soldered installations. Here is flexibility that no other dryer line can match. For the largest installations Ansul dryers can be easily manifolded to provide unlimited drying capacity, eliminating the need for stocking outsize, infrequently used dryers.

Changing a T-Flo Dryer is the easiest thing in the

world. Remember, line breaking is not necessary. Just unscrew the old dryer and replace it with the new. Hand tightening will give you a leakproof seal. And you can install the T-Flo Dryer in any position, up, down or sideways.

Ask your Ansul Wholesaler about the new DRY-EYE fitting. The window changes color to let you see if the system is wet or dry. This is the most important servicing aid ever developed by Ansul—there's nothing else like it on the market. THE ANSUL CHEMICAL COMPANY, Marinette, Wis.



For more information about products advertised on this page use Information Center, page 26.

McCray Appoints 2 District Managers

KENDALLVILLE, Ind.—O. E. Mountz and W. A. Jaquay have been named district sales managers for McCray Refrigerator Co., Inc.



Realignment of territories in two districts covered by factory representatives makes it possible to increase the field staff and will give McCray much closer contact with their distributors in these localities.

Ed Mountz has been with McCray for six years. Since 1953 he has been in the sales department as home office contact with distributors in the South Central states. His assignment as district manager will be in this same territory.

Walter Jaquay started with McCray in 1951 in the store planning department. In 1953 he was transferred to the Chicago branch but returned to the home office in 1954. As district sales manager he will take over the northeastern states.

Preway, Inc. Appoints Jack Claywell Chief Refrigeration Engineer

WISCONSIN RAPIDS, Wis.—Jack Claywell has been appointed chief refrigeration engineer at Preway, Inc., announces H. H. Niemann, vice president and plant manager.



Claywell, formerly of Deep-freeze Div., Motor Products Corp., has had 10 years of experience as production engineer in charge of low temperature products and previously was a design engineer. His experience also includes management of service facilities in the refrigeration field.

At Preway, Claywell is engaged in the design and development of a built-in refrigerator which will be marketed this year. No announcement has yet been made of the refrigerator, pending final tests.

Wall St. Skyscraper Will Get Conditioning

NEW YORK CITY—A 35-story, air conditioned building will be constructed at the northeast side of Wall and Pearl Sts. by Franklin Atlas Corp. of 80 Wall St., New York City.

This is the first new skyscraper to be built on Wall St. in more than 20 years.

According to J. L. de Lyra, treasurer of Franklin Atlas, the new structure will be known as the International building and will contain 248,000 sq. ft. Construction will probably begin in February of next year, it was stated.

To Cool City Hall

MONTGOMERY, Ala.—A contract for \$82,000 has been awarded to George Bagwell Co., Montgomery, for air conditioning the city hall here.

Air Conditioned 'Fishin' Hole' Makes Anglers as 'Happy as a Good Catch'

MIAMI, Fla.—To keep customers comfortable, provide better working conditions for employees, keep the shop cleaner, and dehumidify the space, a fishing tackle and repair shop has installed air conditioning here recently.

The Fishin' Hole, quarter-century landmark here, recently had the Biscayne Air Cooling Sales & Service, Inc. install a 5-ton air-cooled Typhoon near the ceiling in the corner of the sales area of its shop.

The same unit air conditions the rod making and repair shop also.

Larry Thomas, owner of The Fishin' Hole, expressed delight with the operation of his waterless package unit. "It fills a 4-fold need," he said.

"First, our customers are happy to find a tackle shop that is air conditioned. It makes them almost as happy as a good catch. And our clientele ranges from the night bridge angler to the big game fisherman who stock up for days' or weeks' expeditions," he went on to explain.

In addition, Thomas went on, air conditioning makes for better working conditions for employees. Besides that "our shop stays cleaner, and dirt is harmful to tackle, as is humidity."

Open 4:30 a.m. to 10 p.m., seven days a week, in order to meet a heavy demand for ice, The Fishin' Hole also had the Biscayne firm install a ½-ton ice machine, it was further explained.

70 Combine To Organize Rochester ASRE Section

ROCHESTER, N. Y.—A Rochester Section of the American Society of Refrigerating Engineers was organized recently and received its charter at the 52nd annual meeting of the Society in Cincinnati on June 4.

Robert Lee Boyd, section chairman, represented the Rochester Group and received the charter.

Composed of 70 local refrigeration and air conditioning engineers, contractors, and suppliers, the Rochester section elected the following officers: R. L. Boyd, Electromode Div., chairman; J. D. Johnson, Rochester Gas & Electric and S. J. Stachelek, Rochester Industrial Insulation Co., vice chairmen; O. H. Hellekson, Minneapolis-Honeywell Regulator Co., secretary; H. J. Dyminski, Genesee Refrigeration Co., treasurer; R. E. Cherne, consulting engineer, and J. G. Doebrich, York Corp., executive committee.

Principal committee chairmen include: Wm. Hill, Trane Co., publicity; Chas. Edwards, Kodak, attendance; Donald Sweetland, Rochester Gas & Electric, reception.

Barnebey-Cheney Names Tapy as Sales Representative

COLUMBUS, Ohio—F. E. "Frank" Tapy of Omaha, Neb., has been appointed sales representative for "Pur Air" activated charcoal air purification equipment throughout the state of Nebraska and western Iowa, according to H. L. Barnebey, vice president of the Barnebey-Cheney Co. here.

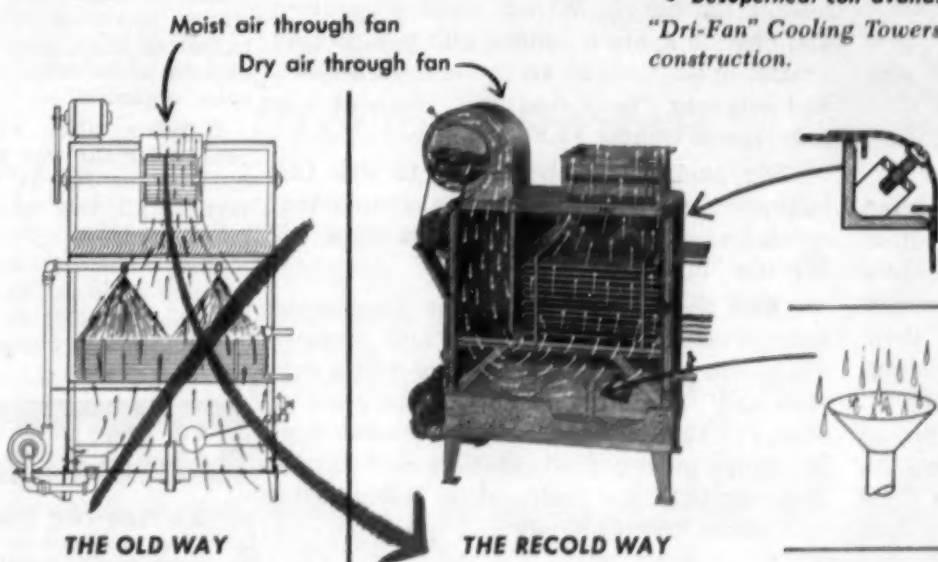
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Think YEARS AHEAD

If you don't think years ahead you may find yourself burdened with costly problems. For example: corrosion and scaling, deteriorated fans, exorbitant repair bills, days of down-time all caused by moist air continually pulled through the fan section. The way to avoid these future problems is to specify dependable "Dri-Fan" by RECOLD. "Dri-Fan" is the Evaporative Condenser that pushes dry air through the fan section, eliminates corrosion problems, gives you long trouble-free performance. Check the exclusive, patented RECOLD features and see why more and more the order is for "Dri-Fan." Available for Freon 12, Freon 22, and ammonia in capacities from 5 to 150 tons, single or multiple circuit installations.

• Engineered for quiet operation • Galvanized construction
• Desuperheat coil available • Easy to install and service
"Dri-Fan" Cooling Towers provide the same advantageous construction.



THE OLD WAY
Highly saturated air is constantly pulled through the vulnerable fan section causing corrosion, scaling, deterioration of the fan, shaft and bearings.

"DRI-FAN" ELIMINATES CORROSION PROBLEMS
RECOLD uses the forced draft principle to push dry air through the condenser. The fan operates in the dry air stream.

Think about serviceability—
RECOLD advanced cabinet design provides water-tight panels that are quickly and easily removed.

Think about bleed control—
RECOLD "funnel" design assures positive, non-clogging action with scale control and minimum water loss.

Think about accessibility—
Patented access door slides easily, provides water-tight seal without use of gaskets or fasteners.

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Do It
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Jimmy
Hatlo



Good News For Commercial Dealers 'Heat and Eat' Is Here To Stay

There's a boom in luxury frozen food items. Commercial refrigeration dealers, please note.

Chain stores are pushing them despite fancy prices. Why? Because their sales of relatively expensive frozen luxuries are growing faster than retail purchasing of so-called fresh fruits, vegetables, and meats which must be cooked at home.

Nowadays a recent bride who doesn't know how to boil water can serve a sumptuous dinner beginning with a crisp oyster cocktail, and proceed to lobster newburgh or brook trout sauteed by expert chefs. Main course could be beef Stroganoff from San Francisco. For dessert she can choose from Lindy's New York cheese cake, imported Italian manicotti cheese sticks, or apple cobbler a la New Orleans from the celebrated Antoine restaurant.

Yesterday such foods couldn't be served in any American household, no matter how much time a wife might have to experiment. Today they are not unusual. Tomorrow they may even be commonplace. The reason: anyone with a freezer can buy Luchow's Swedish specialties or a Parisien Maxim's complete dinner for two at any price you wish to pay in advance.

This burgeoning "heat and eat" new industry is capitalizing on rising incomes and increased interest in convenience food items, plus more working wives, to effect an explosion in home food habits.

Quite a few small packers who started with one pre-cooked frozen specialty item three or four years ago now find themselves embarrassed with a too-flourishing business which stretches their capital—and their quality control. Some of them are trying hard to limit distribution in self-defense.

In the meantime, quite a few famed restaurants have decided to capitalize on their reputation, and "get into the act." So they are freezing and packing their best

specialties for national and even international distribution.

Until recently there has been scant competition from giant packing houses. Reason: frozen food cabinet space in retail stores is severely limited. (Here is a CHALLENGE for commercial refrigeration dealers!)

At present our Eastern and Western seaboards comprise the top market for these luxury frozen specialties. Los Angeles, San Diego, Miami, and New York City are the readiest.

However, there's a new day coming: Inasmuch as chain supermarkets are beginning to stock high-priced frozen delicacies in profitable quantities throughout the Midwest, Southeast, and Mountain States it can be predicted that this housewife-liberating movement soon will encompass the entire U.S.A.

Luxury frozen foods presently include cornish hens, smoked pheasants and ducks, stuffed barbecued chicken, veal and beef; plus fresh trout, chicken a la king, hors-d'oeuvres, egg rolls, exotic soups, pizza pies, macaroni, ravioli, blintzes, sauced Chinese foods, de-veined shrimp, deviled crab, breaded oysters, Salisbury steak, beef goulash, lobster newburgh, shrimp creole, macaroni and cheese, spinach souffle, and potatoes au gratin, in addition to all the standard meat-and-potatoes "heat and eat" dinners any man could want.

Big packers are beginning to eye this business seriously. It should be obvious that quick-frozen Ten Minute Dinners soon will become "big business."

And that's great news for commercial refrigeration manufacturers and dealers. To accommodate the acceptance (let's say: "demand") from housewives who need to conserve time (and who wish to serve more luxurious meals) food retailers will have to augment their low temperature refrigeration equipment tremendously and quickly.

The real danger of democracy is, that the classes which have the power under it will assume all the rights and reject all the duties—that is, they will use the political power to plunder those who have.—WILLIAM GRAHAM SUMMER.

"Freedom to think as you will and to speak as you think are means indispensable to the discovery and spread of political truth. Without free speech and assembly, discussion would be futile; with them, discussion affords ordinarily adequate protection against the dissemination of noxious doctrine. The greatest menace to freedom is an inert people. Public discussion is a political duty; and this should be a fundamental principle of American government."—Justice LOUIS BRANDEIS.

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VOLUME 78, No. 6, SERIAL No. 1,421 JUNE 11, 1956

READER GIVES VIEWS ON BUSINESS FAILURES

Forrest D. Poole
Portsmouth, Ohio

Editor:

Today I happened across a copy of AIR CONDITIONING & REFRIGERATION NEWS of several weeks ago and you were discussing the business failures in the refrigeration manufacturing industry.

I am probably about as experienced in refrigeration policies (or the lack of such) as any one. This industry, to my surprise, has gone forward with the least planning of any major field of endeavor.

It is one of the worst cut throat businesses in the world and the manufacturers are to blame because they are constantly jockeying for some way to better their position at the expense of the retail service and sales organizations.

If refrigeration wasn't a necessity for our way of life, this industry as far as I am concerned, all the manufacturers could go broke.

The manufacturers have pinched us so far and discounts so small that it is impossible to follow their prices.

RACCA could have avoided much of this but they are asleep to the major problems or aren't willing to acknowledge it.

Therefore I say to heck with the whole mess as after over 35 years of it I am used to anything.

FORREST D. POOLE

FROZEN FOOD EDITORIAL INTERESTS UTILITY

New Orleans Public Service, Inc.
New Orleans 9, La.

Editor:

Congratulations on your fine editorial on commercial refrigeration in the April 30 issue. It contains information of real value to anyone interested in advancing the acceptance and use of frozen foods.

In the utility business we have such an interest, and request your permission to duplicate your editorial for distribution to our Commercial Representatives. They will be able to use this information to advantage in promoting the sale of frozen food equipment with the food stores they contact.

Many thanks for your consideration.

J. R. GUIDROZ

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To See the Industry In Action EVERY WEEK

Keep up-to-date on what's going on in your industry. You'll see action weekly in AIR CONDITIONING & REFRIGERATION NEWS. Covers latest news and gives you top how-to-do-it reports on commercial and residential air conditioning, commercial and home refrigeration: manufacturing, contracting, distributing, retailing, and servicing. Read the Industry's newspaper for profit every week. Only \$6.00 per year, 52 issues (U.S. and Canada). Foreign: \$10.00 per year.

AIR CONDITIONING & REFRIGERATION NEWS 6-11-56

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Name.....

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Las Vegas RACCA Offers Refrigeration Safety Code, Qualification Certificate

LAS VEGAS, Nev.—A refrigeration safety code for the city of Las Vegas has been offered to the city commission for adoption by the Refrigeration & Air Conditioning Contractors Association of Las Vegas, it was reported here recently.

The proposed code has already had its second reading by the commission.

The code would adopt the ASA B-9.1 code in its entirety. It would also require "certificates of qualification" for all persons doing business as refrigeration contractors and as refrigeration installers.

Refrigeration Installer Is Contractor's Employee

A refrigeration installer is defined as "a person who works or labors at the trade of refrigeration installation as an employee of a refrigeration contractor."

The code would charge a five-man board of examiners with the duty of examining applicants for the two classes of certificates and issuing licenses to those who qualify. No experience qualifications for either class are specified.

The board will consist of two refrigeration contractors, one refrigeration installer, a state registered professional engineer, and a layman. All are to be appointed by the mayor for staggered three-year terms.

\$50 Fee for Certificate

Successful applicants for a contractor's certificate are required to pay a \$50 fee and also obtain a city business license. The fee for installers is \$5.

The code specifies that all refrigeration systems and refrigeration apparatus shall be inspected by the administrative authority to insure compliance with the code. Persons doing the work are expected to notify the authority when the work is ready for inspection.

City refrigeration inspectors will be required to have at least

five years' experience with refrigeration installations and hold a certificate of qualification.

Violators of the code are punishable by a fine of not more than \$500 and/or six months imprisonment.

Permits become void if the work for which they are issued is not commenced within 60 days or if the work is suspended or abandoned for a period of 60 days.

Norge Appoints Willie Assistant in Advertising

CHICAGO — Promotion of Russell F. Willie to assistant director of advertising was announced recently by Robert J. Runge, director of advertising, Norge Div., Borg-Warner Corp.

Westinghouse Names Richmond Wesco Unitaire Wholesaler

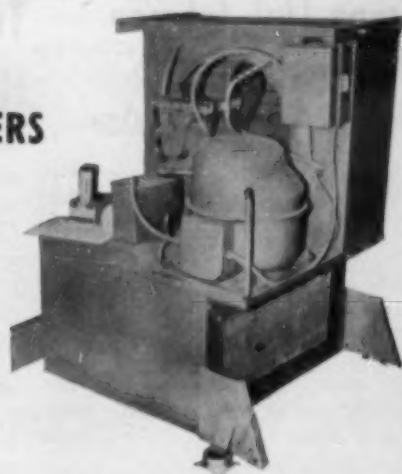
WASHINGTON, D. C. — The Air Conditioning Div. of Westinghouse Electric Corp. has franchised Westinghouse Electric Supply Co., Richmond, Va., for the wholesaling of its newly announced warm air heating line and commercial and residential "Unitaires" in the territory including the Richmond and Charlottesville trading areas, it was announced here recently.

The Richmond Wesco branch has a complete local stock of Unitaire merchandise from 2 to 15 tons, along with Westinghouse heating equipment and necessary renewal parts, and is expanding the previous dealer organization in its territory, the announcement said.

AIR COOLED AIR CONDITIONERS

New, in original cartons

for Residential & Commercial Use



1½-ton Model 401X. 1½ HP Tecumseh Hermetic, ¼ HP Condenser Fan, 600 c.f.m. Evap. Blower, 15,700 B.T.U. @ 95° F. outside. Complete with Controls.

\$175.00 F.O.B. Lafayette
SUBJECT TO PRIOR SALE

LAFAYETTE REFRIGERATION DISTRIBUTORS
PHONE 2-0161 — LAFAYETTE, IND. — P.O. BOX 208

GET PEAK DISTRIBUTION regardless of Load or Number of Circuits

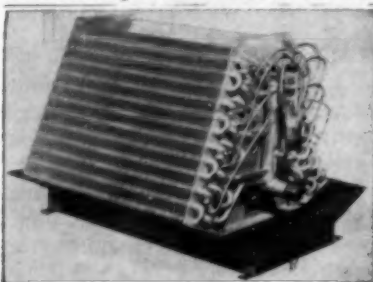


Buy
SPORLAN REFRIGERANT DISTRIBUTORS
with these 11
Proven Features!

1. Sporlan Distributors give the best possible distribution under all conditions regardless of load, number of circuits or evaporator temperature.
2. The Sporlan Refrigerant Distributor is a separate device from the valve, permitting the use of any standard thermostatic expansion valve. No moving parts.
3. Capacity may readily be varied because Sporlan offers interchangeable nozzles.
4. Requires very little space and is easy to install, because all connecting tubes are grouped close together and come off in the same direction.
5. May be applied to any make multi-circuit evaporator. May be installed in any position for any load or evaporator temperature.
6. Wide variety of number and sizes of circuits. Easy selection.
7. Allows internal visual inspection of solder joints at distributor.
8. Permits insertion of test wire to check against plugging of solder joint at evaporator connections.
9. Permits final submerged coil leak test with high pressure before attaching valve.
10. Small body is easy to solder or weld.
11. Steel or aluminum bodies are available in certain distributor types for Ammonia and other special applications.

So... whether you are a packaged unit or coil manufacturer, contractor or service engineer... Sporlan is the Refrigerant Distributor for you... Over 15 years of Peak Performance Leadership speaks for itself.

SPORLAN VALVE COMPANY
7525 SUSSEX AVENUE
ST. LOUIS 17, MO.
EXPORT DEPT. AD. AURIEMA INC., 89 BROAD STREET, NEW YORK 4, N. Y.



KRACK FURNACE BONNET Air Conditioning Coil

converts forced air units to summer cooling

- Utilizes forced air furnace duct system
- Easily adapted for new or existing systems
- V-bank coil arrangement for compactness

FREE BULLETIN V-1155

25th Anniversary in Refrigeration & Air Conditioning



901 W. Lake St., Chicago 7, Ill.

Trane Ups Johnson To Transportation Sales Assistant Mgr.

LA CROSSE, Wis. — The Trane Co. has named Randall W. Johnson assistant manager of the company's Transportation Sales Dept.

Johnson, who has had extensive experience in the department, will be in charge of transportation air conditioning and refrigeration equipment sales work with the company's eastern sales offices.

Gerald E. Hicke, manager of the department, will devote his time to the heavy concentration of railroad accounts handled by Trane sales offices located in the middle and far western sections.

It is expected that Johnson's promotion and subsequent activity will allow for an expanded sales operation of the line.

Tissue Frozen at -140° C. Saves Parts, Helps Doctors Repair Damaged Bodies

CHICAGO — A new freeze-drying method of retaining human tissue after being taken from newly-dead persons who donate parts of their bodies to science is responsible for the rapidly growing "spare human parts" banks.

Tissue is frozen at 140° below zero C. and kept until needed by physicians for use in repairing damaged bodies, according to officials of the National Society for Medical Research here.

A 63-year-old Atlanta patient is successfully using about 5 in. of the great artery from the heart which last year was grafted into him at Emory university hospital there.

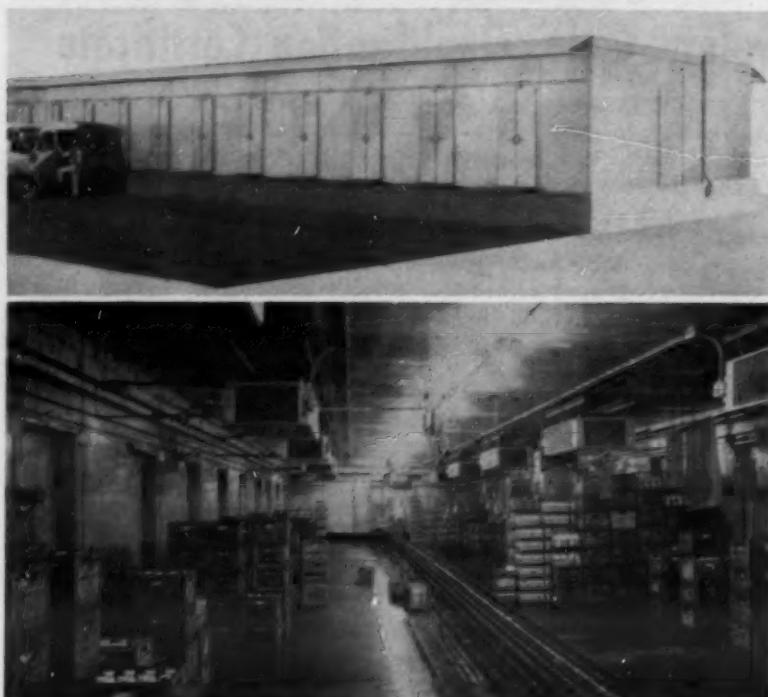
Doctors had received permission from the family of an auto wreck victim to save his large

arteries after he died. The specimen was preserved by the freeze-drying method for about a week before the graft was made. The patient walked out of the hospital 10 days later.

A steady flow of inquiries from would-be donors throughout the country who want to know what steps to take to insure that, when they die, usable parts of their bodies may be used to help others live was reported by the NSMR.

Most immediately useful parts which may be preserved by the refrigeration method, according to the society's secretary, appear to be the cornea of the eye, arteries, skin, bone, and the fascia, the large smooth muscle of the leg used for hernia repair.

Island Refrigerator Cuts Milk Handling



TOP picture shows an angle-view of the sectional steel island refrigerator developed in El Monte, Calif. to store milk overnight until drivers pick it up in the morning. Three trucks can back up to each of 22 sliding doors before the driver loads his own truck. Bottom picture illustrates how milk is conveyed to its proper load-out position by the Mojonnier chain-type unit. This is said to virtually eliminate a regular plant load-out crew, cut labor costs.

44 Feet of Sensational New MCCRAY COLD-SHELF MERCHANDISER



BIG CAPACITY!

Over 1000 quarts of milk or a ton of butter go in the bottom shelf only of one 11-foot case!

SIMPSON'S FOOD FAIR Evansville, Indiana

These four model DAS Dairy Merchandisers are part of 238-ft. of new McCray cases installed in this beautiful market. Sales are sensational because all these cases make shopping more inviting to the customer. This is Jack Simpson's second store and his profitable experience with McCray cases in the first is largely responsible for his specifying McCray throughout his new store.



65 Years of Leadership in Building Dependable Commercial Refrigerators and Display Cases

The Dairy Case that Says "HERE IT IS" to Your Customers

Three big refrigerated shelves practically hand merchandise to shoppers. And these shelves are easily adjustable to your needs for display. *Capacity is the greatest!* For instance, you can stack milk three cartons high in the bottom shelf—over 1000 quarts in the 11-ft. case! Both the 8-ft. and 11-ft. models are designed for continuous installation.

McCray distributors have the equipment and the merchandising tools to do the best job for their customers and to insure their own profit. Some valuable territories are open. Drop us a line.

Mail Coupon Today!

McCray Refrigerator Co., Inc., 601 McCray Court, Kendallville, Ind.
I'm interested in the McCray line. Write me about its availability in my city.

Name _____
Address _____
City _____ Zone _____ State _____

New Conveyor Method Could Alter Retail Milk Distribution

EL MONTE, Calif.—A new development in retail milk handling and storage here could conceivably alter the nation's milk route distribution.

This is a claim made by Moore & Hanks, a firm here which engineered and built a sectional steel island refrigerator for retail milk storage. Mojonnier Bros. Co., Chicago, developed a chain-type conveyor to provide handling.

Currently utilized in Denver by City Park Farm Dairy, a Beatrice Foods division, this special method "realizes savings" for the distributor, Moore & Hanks declared.

Labor Costs Cut

A regular plant load-out crew is virtually eliminated and labor costs reduced, it was emphasized.

Composed entirely of insulated steel "Thermo-Cell" panel sections, the new island refrigerator is 25 by 90 ft. and 11 ft. high. The cold room provides for 66 retail milk routes, three behind each of 22 "Jam Lok" sliding doors.

Order Prepared on Night Shift, Conveyed to Proper Load-Out Spot

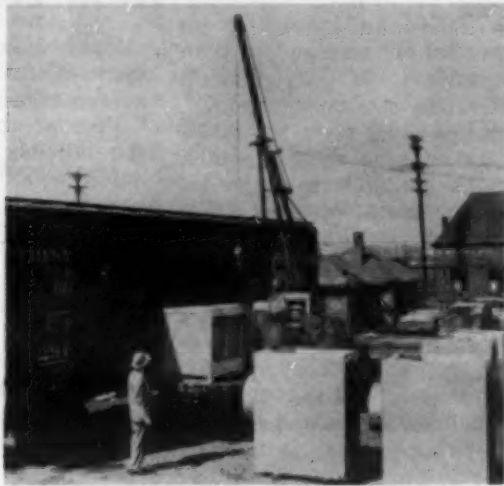
Each driver's complete order is prepared by the regular night shift and conveyed to its proper load-out position by the Mojonnier chain-type unit. Next morning the driver backs up to the dock, rolls open the door to his section, and loads his order directly on his truck, it was further pointed out.

Now available in all sizes, the steel refrigerator may be expanded to accommodate additional retail routes by erecting more sections and sliding doors, according to the originators.

Water Conserving Law Offers Distributor Break; Business Zooms with Use of Truck-Crane To Hoist Cooling Towers



HEAVY cooling tower units are lifted into a second-story window by the truck-crane operated by the Hank Thurstin Co., Denver. The truck-crane is said to have helped the firm sell and install 233 cooling towers in 12 months.



TWO MEN using the truck-crane can unload a boxcar of cooling towers in four hours at what this firm calls a great saving in labor costs.

DENVER—Restrictions on use of water in the city of Denver in connection with air conditioning operations proved to be a particular bonanza for one firm in that city.

When the Denver city ordinance was passed in November, 1954, to conserve scarce water, H. A. (Hank) Thurstin, president of the Hank Thurstin Co., decided that the restrictions against one-time use of water presented him with a real business opportunity. His company had served as sales engineers for many years to air conditioning and refrigeration contractors in the Denver area.

He immediately sought a piece of equipment which would re-use water in air conditioning and so meet the restrictions.

Becomes Cooling Tower Area Distributor

He was happy to find that Marley cooling towers met the Denver restrictions on use of water. So he became exclusive distributor for them in the Denver area.

Cooling towers are both heavy and bulky. In most instances they must be installed on roofs or on the upper floors of a building. This presented a new problem.

Thurstin then realized that he must find a way to install the heavy and bulky cooling towers quickly and also at low labor cost.

He contacted a Denver representative of Truck Crane, Inc., Chicago, regarding mobile equipment to lift the cooling towers into place.

Installs "Truck-Crane" On Body of Truck

Within a few days a "truck-crane," specialized equipment for lifting the cooling towers, had been installed on the stake body of a 2-ton Dodge truck.

The results were phenomenal. Thurstin had expected a sharp downturn in his business following passage of the Denver water ordinance, but instead his sales of the largest air conditioning units showed a steady upturn. In the first quarter of 1955 his business increased 1,000% over the 1954 period.

During the first 12 months that the restrictions on water have been in effect in Denver

and the Hank Thurstin Co. has been using the novel truck-crane to install the heavy cooling towers, the distribution company has sold and helped install 233 of the cooling towers.

This record does not tell the entire profit story. Non-competitive businesses, such as boiler, cess pool, heating, water tower, and beacon light installers, rent the truck-crane when it is not busy.

Rentals Help Amortize Cost of the Unit

Cost of the unit is being amortized rapidly by this extra rental at rates of \$10 per hour (including the operator) for short jobs and \$7.50 per hour based on an eight-hour day from 8 a.m. to 5 p.m., Monday through Friday. For odd hours and Saturday work, \$1.75 per hour is added. For Sunday work, \$3.50 per hour is added.

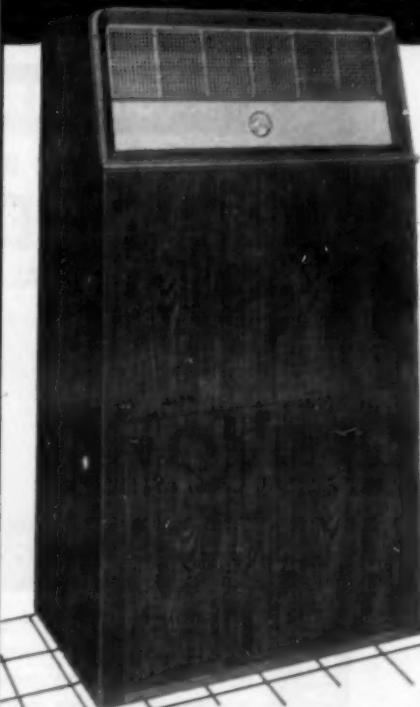
Minimum charge made by the company for hoisting a cooling tower is \$10. Dealers are happy to have this service from the distributor.

Thurstin has mailed to builders, contractors, architects, and all his dealers literature which describes the truck-crane, and the work it will do.

The Dodge truck with the hydraulically-operated truck-crane will handle loads up to 5,000 lbs. in a single lift. The telescopic boom works in any position with a 280° arc and can deposit a unit on a roof or ease it into a second story window.

The unit has been found valuable in unloading cooling towers or other heavy units from freight cars. Two men using it can unload a boxcar of cooling towers in four hours at a great saving in labor costs. Previously it required a full day for two men to unload a car with a fork-lift truck.

New compactness in air-cooled AIR CONDITIONER design!



MODEL RO-525A
(with air distribution head)

Smallest air-cooled, self-contained (not remote) 5-ton central type unit made.

5 natural wood-grain finishes available on all free-standing models.

Completely automatic, thermostat controlled, air-cooled condenser.



MODEL NO.	NOMINAL CAPACITY	TOTAL COOL. B.T.U.	COOLING C.F.M.	OUTSIDE DIM.
FL-2	2 Ton	24,000	900 @ .3 S.P.	30Wx21Dx43H
RO-24	2 Ton	24,000	1000 @ .3 S.P.	30Wx21Dx34H
RO-31	3 Ton	36,000	1200 @ .2 S.P.	30Wx23Dx38H
RO-31 H.P.	3 Ton	37,700	1400 @ .3 S.P.	30Wx25Dx40H
RO-525 A	5 Ton	65,500	1800-2400 @ .3 S.P.	40Wx26Dx57H

Thermostat has 3 positions: Continuous — Automatic, Fan & Compressor — OFF.

Complete air conditioning for entire home — or equivalent commercial or office area — at the lowest cost in smallest space! GENERAL AIR CONDITIONERS deliver 2, 3 or 5 tons of cooling. All models operate on standard outlet (220 V, single and 3 phase except 2-ton — single phase only).

Attic, roof, outside, or free-standing units

NATIONWIDE SALES AND SERVICE

Offices and warehouses:
LOS ANGELES • ATLANTA
BOSTON • CHICAGO
CLEVELAND • HOUSTON
KANSAS CITY • MIAMI
NASHVILLE • NEW YORK
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ST. LOUIS • TAMPA

WRITE today for details. Franchise dealerships available.



MODEL RO-525A
(without air distribution head)

Main Office
GENERAL AIR CONDITIONING CORP.
Dept. N-30 • 4542 E. Dunham St.
Los Angeles 23, California

FIVE YEAR GUARANTEE — easy payment plan



Make Sparkling, Harder Ice Use CSCO Ice Machine Cleaner

Pictured here! An actual user of CSCO Ice Machine Cleaner Powder.

Hard, sparkling ice . . . pure and refreshing . . . can be made only with clean, properly functioning machines. Used in cube or flake ice-makers, CSCO Ice Machine Cleaner Powder safely and effectively removes slime, scale, and dirt deposits that cause opaque ice, slow freezing, offensive odors and tastes. CSCO Ice Machine Cleaner works quickly. A small amount, dissolved in the water tray or freezing compartment and circulated, eliminates deposits accumulated from water supply and air within twenty to thirty minutes. No long shutdown or dismounting is required. CSCO Ice Machine Cleaner is safe—will not harm you or your machines when used as directed.

Get CSCO Ice Machine Cleaner—use it regularly for clearer, harder, sparkling ice!

CSCO ICE MACHINE CLEANER POWDER is made by the originators of SOLVEX—used successfully for over 30 years for cleaning, refrigerating and air conditioning systems—and "CC" Coating, a specially prepared alkali and acid resistant surface coating for metals, wood, concrete and masonry. Get these superior products from your wholesaler, or write:



CHEMICAL SOLVENT CO.

3005 N. 16th Street P. O. Box 487 Birmingham, Ala.

Crane Ups Greene In Industrial, Burbine In Heating Sales

CHICAGO—Crane Co. has announced the appointments of J. W. Greene as director of industrial sales and W. A. Burbine as director of all heating sales. Both men have been promoted from their posts as district managers. Greene headed sales in the east. His headquarters were at Long Island City, N. Y. Burbine was in charge of sales operations in the mid-west with headquarters at Chicago.

Frigidaire 450-Lb. Ice Cube Maker Makes 2 Sizes at Once

DAYTON—An innovation in commercial ice service has been incorporated in Frigidaire's 450-lb. model ice cube maker.

The new feature is a double-grid ice making system which allows the machine to manufacture two sizes of ice cubes simultaneously—the standard size cubes and the tiny 1/2-in.-square cubelets.

The storage bin, which has 350 lbs. storage capacity, has been divided in two sections. One side receives the cubelets and the other the cubes. The complete operation is accomplished automatically.

This double unit is optional at extra cost.

Perpich Becomes Partner In Great Lakes Refrigeration

DETROIT—Harold J. Perpich has joined Great Lakes Refrigeration Equipment & Service Co. here as an active partner, it was announced recently by A. N. Polancy of Great Lakes.

Perpich has been in the refrigeration business for several years.

Great Lakes is a distributor of store equipment for Sherer-Gillett Co., air conditioning and other products of Frigidaire, and various types of refrigerated cabinets produced by Ace Cabinet Corp.

Experiments Show

Antibiotics Can Keep Fish, Red Meats Fresh Longer; Up Poultry Shelf Life

NEW YORK CITY—An executive of American Cyanamid Co. recently told a conference of Federal and state food and drug officials that use of antibiotics will become the most common new technique of preserving food "in the immediate years ahead."

Allan B. Clow, general manager of the company's fine chemicals division, said recent experiments indicate that the antibiotic Aureomycin chlortetracycline will extend the time fish and red meats can be kept fresh.

He pointed out that American Cyanamid, with government approval, is already selling a special grade of this product, called "Acronize," to poultry processors. Research has shown that it approximately doubles the shelf life of poultry, he said.

Citing results of recent experiments, Clow explained that in one of them, salmon caught off Washington state were packed in ice containing five parts per million Aureomycin chlortetracycline, and shipped to New York along with other salmon packed in untreated ice.

When inspected upon arrival in New York, the salmon packed

in untreated ice had a "slight off-odor" and showed "discolorations throughout," but those in the treated ice had a "fresh, sweet odor and a uniform pink color," Clow said. It was estimated that the antibiotic resulted in extending freshness about a week, he stated.

In another experiment, conducted in San Juan, Puerto Rico, Acronize solution was infused into some beef carcasses which were then hung alongside other beef at room temperature, it was noted.

After 72 hours, the untreated beef was "spoiled and gave off an odor," but the treated beef was "as fresh in appearance and odor as when slaughtered," Clow reported.

He said these findings and those of similar experiments in Columbia "indicated strongly that Acronized beef will remain fresh for at least three days after slaughter in temperatures averaging 76° F."

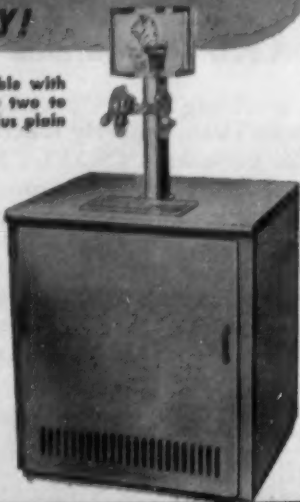
Noting that the Colombian government has sanctioned the commercial use of Acronize on beef, Clow said other experiments with meat are being conducted in Brazil, Guatemala, and Mexico.



Completely self-contained and available with two to four Mixomatic arms to serve two to four carbonated flavored beverages plus plain carbonated soda.

- Automatically serves carbonated mixed drinks at uniform flow and with exact amount of syrup.
- Dispensing tower has syrup and soda lines internally refrigerated to point of delivery.
- Revolving transparent display merchandiser mounted on top of dispensing tower.
- Two beverage unit delivers 150 drinks per hour.
- Three and four flavor unit produces up to 380 drinks per hour.
- Stainless steel top and front—double baked enamel exterior.
- Eliminates handling of bottles and saves money by producing finished drinks at less than half the cost of bottled drinks.

Write for descriptive literature



THE DUNKILL SODA FOUNTAIN CORP.
79-85 Walworth Street, Brooklyn 5, N. Y., MAin 5-4806
Export Dept., 39 Broadway, New York 6, N. Y.



There's
nothing
like
high
reserve
capacity!



PA 400 has the highest capacity for moisture adsorption under the most adverse conditions in refrigerator operation . . . higher than any other desiccant. This reserve capacity is a safety factor. PA 400 keeps the refrigerator running even though there is sufficient moisture in the system to completely "saturate" other desiccants.

No other refrigeration desiccant gives you as much as PA 400 . . .

- Highest capacity
- Minimum pressure drop
- Physical adsorption not chemical action
- Non-dusting
- Adsorbs acids
- Dries refrigerants to below 2ppm at 120° F.
- Non-deliquescent
- Does not channel

Progress Through Chemistry

DAVISON CHEMICAL COMPANY

Division of W. R. Grace & Co.

Baltimore 3, Maryland

Producers of Catalysts, Inorganic Acids, Triple Superphosphates, Superphosphates, Phosphate Rock, Silica Gels and Silicofluorides. Sole Producers of DAVCO® Granulated Fertilizers.



Pre-Freezing Packaging Said To Cut Freezing Time, Eliminate Double Wrapping, Use of Tape

MINNEAPOLIS — Designed for the small operator, new equipment for packaging meats before freezing was demonstrated at a recent meeting of the Minnesota Frozen Food Locker Association.

A new firm, Ridgeway Corp., has been formed to make the equipment. The firm is a subsidiary of Allied Commodities Corp., a manufacturers' representative for some 40 mills which manufacture a variety of products.

The equipment saves time and money and reduces dehy-

dration of packaged products, which cuts freezing time and eliminates double wrapping and use of tapes, the company says.

Explaining the operation, the company said a special machine evacuates and heat-seals bags. Included with the equipment are new special-type bags, a rack for assorted bag sizes, a stacked tray section on a swivel base for filling, and a foot control unit for operating the sealing machine.

The equipment fits onto a counter 8 ft. long and from 24 to 30 in. wide.

REFRIGERATOR - FREEZER COMBINATIONS

MEET THE BUYER DEMAND
A BIG FREEZER VALUE
UNITED'S DUAL PURPOSE UPRIGHT

SAFELY SHARP FREEZES

Model UP 32
32 cu. ft.
Freezer Storage

SAFELY STORES OVER 1,000 lbs.

This big freezer value provides ideal backroom storage wherever food is served or frozen food sold. Meeting the most rigid commercial demands it means an extra measure of safety for food . . . extra savings in economy of operation.

Write for full information.

DESIGNED, ENGINEERED AND MANUFACTURED BY
United COMPANY
HUDSON, WISCONSIN
WRITE, WIRE OR PHONE TODAY

Empty Parked Trailers Maintain Zero ° Temperature 4 Hours In Pulldown Test

EDGEWATER PARK, Miss. —“All of the trailers reached the objective originally established for this test, that is, that of maintaining zero degree temperature in an empty trailer parked in an open lot,” stated C. W. Phillips, Chief Refrigeration Test Engineer, National Bureau of Standards, in an informal discussion with the Automotive Equipment Development Committee, of the Regular Common Carriers Conference here, following demonstration tests on refrigerated truck trailers here last month.

Demonstration In 3 Parts

The demonstration conducted for the Regular Common Carriers Conference was in three parts, Phillips explained. First, a more or less conventional heat loss test was run. Next, the trailers were cooled down to ambient and then the refrigeration units were started and trailer temperatures were reduced to zero and held at zero for a minimum of four hours.

In the final phase, the refrigeration units were turned off and the temperatures were read as the heat gradually penetrated into the trailers.

Heat Loss Results Generally Consistent

The results of the heat loss test were generally consistent in that the observed relative heat transmission values reported for the trailers as a group ranged between 75° and 104° B.t.u. per hour. These values were obtained by taking readings of the average inside air temperature and the ambient (outside air temperature) while a measured amount of heat was being given off in each trailer by an electric heater and a fan.

The power consumption of the heater and fan, measured on a watt meter, converted to B.t.u. was then related to the temperature differential between the inside and outside of the trailers. The result expressed in B.t.u. per hour, per degree of temperature differential observed in the test, was the measure of heat transmission.

Results of Pulldown Less Uniform

Results of the pull down demonstration, i.e., reducing the trailer inside temperature from ambient to zero were somewhat less uniform than the heat loss test. One trailer reached zero in 2 hours and 49 minutes. The balance of the trailers required somewhat more time.

Phillips stated that during the heat loss test temperatures in the trailers ranged from 120° F. to a maximum of 151° F. and that these temperatures might possibly have had some effect on the functioning of the refrigeration units in the subsequent pull down test.

All trailers were able to reach and maintain zero degrees temperature in a static condition, without commodity load and at ambients approaching 90° F.

As a further demonstration, the heaters in several of the trailers were again turned on after the temperatures reached zero and the temperatures were

still maintained at zero with this additional heat load of more than 4,400 B.t.u. per hour. The refrigeration units maintained this temperature while cycling on and off.

Tested Temperature Rise

The final or warm up test was started by turning off the refrigeration units at midnight—all trailer temperatures being approximately zero—and taking readings at frequent intervals as the temperatures rose. Here again performance of the various trailers was reasonably uniform in that by 11 a. m. that is, 11 hours later, the temperatures in the interiors ranged from a low of 57°, to a high of 75° F.

This test points to the need for further work in the development of rating and testing pro-

cedures and test methods for determining performance characteristic of refrigerated trailers and their refrigeration units.

In expressing the appreciation of the Regular Common Carrier Conference to the U. S. Department of Agriculture, the National Bureau of Standards, the vehicle and refrigeration equipment manufacturers and to TTMA, Lee R. Sollenbarger, vice president of Denver-Chicago Transportation Co., said:

“This demonstration of refrigerated trailers points to the need to develop standard methods of testing and rating.

Phillips of the National Bureau of Standards agreed, and went on to explain that this was a pilot test of seven different makes of trailers and four different makes of mechanical re-

frigeration units designed to explore the feasibility of open air testing of refrigerated trailers.

He pointed out that the test was a static test in that the trailers were parked in an open lot back of the hotel and subject to only a minimum of air movement.

Illustrative of this condition was the fact that the “skin” temperature on the roofs of the trailers measured in excess of 135° F. while the ambient was only 86° F. Thus there was a temperature differential between the outside or “skin” temperature and the inside of 135° F. when the temperature in some trailers was at zero.

Phillips also pointed out that these were new trailers, and as such were probably free of excessive entrapped moisture. The presence of moisture in the insulation of trailers in normal service, reduces the insulating value of the insulation and thus trailers in service could give

somewhat different results than these new trailers. It was pointed out that further work should be done in relating moisture gain in trailers in service to test results for new trailers.

All temperature readings were taken by thermocouples and read on a potentiometer. Trailers were coded and the thermocouple leads so intermingled that readings were significant only when decoded.

Trailers were furnished by: Dorsey Trailer Co., Elba, Ala.; Fruehauf Trailer Co., Detroit; Highway Trailer Co., Edgerton, Wis.; Lufkin Trailer Co., Lufkin, Texas; Miller Trailer Co., Bradenton, Fla.; Steel Products Co. (Great Dane Trailers), Savannah, Ga.; Trailmobile Inc., Cincinnati.

Refrigeration units were manufactured by Coldmobile Division, Union Asbestos & Rubber Co.; U. S. Thermo Controls Co.; Transcold Inc.; and True Kooler, Inc.



1956 Mid-Season Report from the “LEHIGH TEAM” MANAGEMENT ENGINEERING PRODUCTION

Lehigh took many forward steps in the first half of 1956. Manufacturing facilities have been substantially increased—bringing to a conclusion expansion plans initiated during 1955.

A degree of limited “automation” has been introduced to speed the flow of tooling and assembling operations and to assure accuracy at every production stage.

Early this year Lehigh introduced its new tubular airframe base on open type units. This replaces the conventional heavy steel base and legs which have added so much needless weight to all condensing units. In addition to substantially reducing weight, the new base offers many advantages in shipping, handling and servicing.

Of outstanding importance this year was the entering into full scale, large volume production of the fabulous V-93 automotive air conditioning compressor. The compact dimensions, smoothness of operation and truly amazing capacity of this unit have brought it wide acceptance by leading car and automotive air conditioning manufacturers. It is very likely that the air conditioned automobile that you enjoy this summer is cooled by a Lehigh V-93.

The V-93 compressor has also been incorporated in Lehigh's popular line of truck refrigeration systems. As a result, capacities are higher and overall weight has been reduced.

As always, the LEHIGH TEAM invites your inquiry on any commercial or industrial problem.

Export Dept.
13 E. 40th St.
New York 16, N. Y.



Lehigh

BLU-COLD

CONDENSING UNITS AND SYSTEMS

Lehigh Manufacturing Co. Lancaster, Pa.

DIVISION OF LEHIGH FOUNDRIES, INC.

Westinghouse Water Coolers for Home or Office



KEY NO. F-620

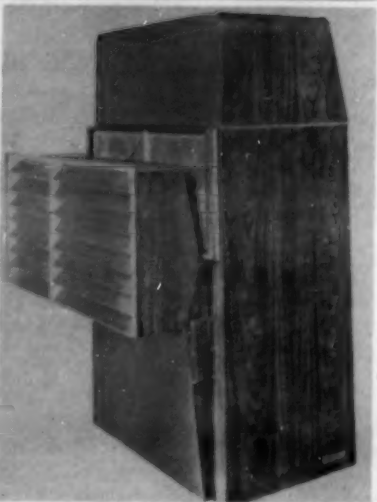
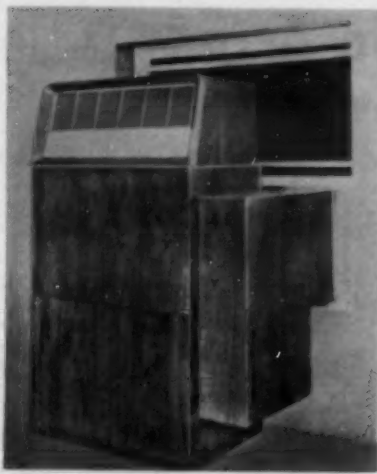
CHICAGO—Two new water coolers—one a bottle type, the other pressure operated—were introduced here recently by Westinghouse Electric Corp., it was announced.

Designed for use in home or

office, the units are termed "Cooleret." The bottle type was brought forth in 1955, the pressure type is an addition to the line, the company asserted. Both models occupy only slightly more than 1 sq. ft. floor space.

Bottle Cooleret is equipped with a 1-gal. reservoir and needs no plumbing or drain connections. By removing the lift-off lid, water can be poured into the reservoir and kept cooled until wanted, it was further stated. Spring water bottles of up to 5 gals. capacity can be used if desired. A push-button faucet and removable waste water receptacle are included in the unit, it was added.

Pressure operated Cooleret is plumbed in to water and drain lines to provide a constant supply of cooled water up to 2 g.p.h. It has a pushbutton operated bubbler and has optional glass filler attachment. Both models are counter height and are available in white or silver gray, the company said.



KEY NO. F-622

ABOVE are front and back views of the 5-ton General air conditioner with natural wood finish for direct window or outside wall installation. It is manufactured by General Air Conditioning Corp., Los Angeles.

Milk Vendor Handles 70 Half-Gal. Cartons

KEY NO. F-621

CHICAGO—A compact unit capable of vending 70 half-gal. milk cartons was introduced recently by Jennings & Co. here, according to Louis F. Urban, president.

Designed for easy servicing and cleaning, the new vendor features two complete pull-out tray assemblies. Each electrical unit has a unitized Jones plug which allows it to be disconnected from the vendor for checking as a lamp plug is removed from a wall socket. Open leaf switches, which can be visually adjusted, are also used in the electrical circuits.

The cooling system includes a 1/4-hp. Kelvinator sealed compres-

sor. For outdoor locations a rigid all-steel shelter, provided by Jennings, can be quickly and easily erected, the company said.

Separated trays on the indexing conveyor prevent cartons from jamming and keep them from being squeezed out of shape during the delivery operation, it was stated.

According to Urban, cartons drop only a few inches into dual chutes where they are delivered upright. The separated trays and the short drop means that "leakers" are eliminated, he said.

Equipped with a National Reflector Accumulator coin system, the half-gal. machine will accept any combination of coins from one cent up to \$1.30.

Information Center

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DETROIT 26, MICHIGAN

RBM Introduces New Appliance Relay

KEY NO. F-623

LOGANSPOUT, Ind.—R-B-M Div. of Essex Wire Corp. here recently announced a new appliance relay type 75.

Designed specifically for appliance applications where trouble free operation and low cost are vital factors, the unit features a folded terminal block, actuator, dust and lint protective contact hood, and contact action which prevents contact welding, the company claims.

Available either in single pole normally open, or two-pole normally open versions with either screw or quick connection terminals available, the type 75 relay has 25 amps. resistive 230 v. contact ratings, it was noted. Two-pole 20 amps. is inductive to 230 v. Coil ratings up to 240 v. 50 or 60 cycle are available.

Coil is furnished with quick connect terminals in the UL approved, 221/4 by 23/8 by 2 1/4 in. relay, the firm said.

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Model O Single-Stage Pump—1 mm. vacuum, blank flange, 1 CFM, 1/4 HP, weight 48 lbs.

Model A Two-Stage Pump—1/10 mm. vacuum, blank flange, 2.5 CFM, 1/2 HP, weight 80 lbs.

Write for prices and data.

BEACH-RUSS COMPANY

52 CHURCH ST. • NEW YORK 7, N. Y.

Low Temp Gauge Column Portable Ice Chest Offered by Phillips Rolls on Casters

KEY NO. F-624

CHICAGO—A new low temperature gauge column for refrigeration systems has been announced by H. A. Phillips & Co. here.

The column is made up of a series of Phillips "Level-Eyes" which will not frost over or become fouled by oil or dirt, the company said.

"Liquid behind these unique bullseyes appears black, the absence of liquid leaves the glass clear," it was explained. "Boiling liquid does not affect the reading."

According to the manufacturer, besides its frost-free readability feature, the column is compact and easy to insulate. Only the Level-Eyes must be left uncovered. A transparent plastic "Frost Shield" may be inserted over the Level-Eyes for very low temperature use.

The column is suitable for use between -50° F. and 250° F. and at working pressures to 300 p.s.i.g. It can be supplied at any practical length with Level-Eyes spaced as close as every 2 in.

KEY NO. F-625

TOLEDO—A new product, Allen P-100 portable ice chest, a mobile means of dispensing ice cubes or cracked ice in hospitals, motels, hotels, resorts, and similar places was introduced here recently by Allen Filter Co.

Heavily insulated, the unit has a 100-lb. capacity in its heavy gauge stainless steel exterior and galvanized liner, the company said. It moves on large ball-bearing casters.

Handle, spigot, and lid lift are chrome plated.

The 40-in. high and 18-in. diameter chest is priced, with galvanized liner, at \$90; with stainless steel liner, \$115. With synthetic baked enamel exterior and galvanized liner, the ice chest costs \$50.



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Contract manufacturing to your specifications available.

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THERE IS A BROWNING ICE STORAGE BIN FOR EVERY MODEL AUTOMATIC ICE MACHINE



Mr. Ice Machine Dealer:

SELECT PROVEN TOP QUALITY ALUMINUM OR STAINLESS STEEL

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CUSTOM—BUILT

ICE STORAGE BINS

BROWNING COMPANY

651 WELLS STREET, S. W. ATLANTA, GA.

Connector Input Plug Reduces Lead Numbers

—KEY NO. F-626—

NEW HAVEN, Conn.—A new hermetically sealed connector type input plug for power supplies, designed to reduce the number of leads to the supply, was recently introduced by Condenser Products Co., a division of New Haven Clock & Watch Co. here.



New polarized connectors result in completely cabled power supplies with two screw type connections, one for high, the other for low voltages, the manufacturer stated. They eliminate need for bringing the lead to each of a number of single bushing terminals.

Connectors have two, three, or four pin contacts. They meet service A of specifications MIL-C-5015B. Available on all of the company's power supplies up to 25,000 v., their primary use is as an input terminal. Connections can also be used for control circuits and interlocks.

Notcher Punches Shapes On Sheet Edge

—KEY NO. F-627—

PHILADELPHIA—Specifically designed for punching various shapes along the edge of a sheet with variable spacing, depth, and patterns, the Ruoff "Notcher" is available from Consolidated Marketing Corp. here.



Essentially a punch press with adjustable automatic feed, the notcher eliminates slow hand shear notching in handling both flat and circular stock, the firm declared. Suited for notching dovetail or clinch collars used in air conditioning, heating, and ventilating systems, the unit can make curved metal letters and similar items.

Operated by a ¼-hp. motor with cutting level 3 ft. off the floor, automatic feed puts material through the notcher at speeds up to 18 f.p.m., the company said. It accommodates any sheet steel in thicknesses up to 0.329 in. and thickness of other materials in proportion to shear strength.

One adjustment decreases or increases spacing up to ¾ in. centers, another reduces notch depth from a maximum of ¾ in. Notcher comes equipped with standard male and female discs which make about a 15° notch, it was noted. The unit is 18 in. wide, 12 in. deep, and 50 in. high. Its crated weight is 70 lbs.

Semi-Rigid Duct Insulation Offered

—KEY NO. F-628—

TRENTON, N. J.—Semi-rigid duct insulation designed for application to exterior or interior duct surfaces is announced by Baldwin-Hill Co. of Trenton, N. J. and Huntington, Ind.

Felted from longer, finer spun mineral wool fibers, the new insulation is available in three types: plain, and with an integral vapor barrier for application on duct exteriors; and neoprene



coated for application on duct interiors.

The Underwriters' label has been applied for on both the plain and neoprene coated duct insulation.

The insulation "is not irritating to handle and is easy to cut with a knife to conform to irregularly shaped or curved surfaces," according to the company.

"Composed of non-cellular, spun mineral wool, the material will not absorb moisture. When applied where condensation is a problem the vapor barrier type should be used. Baldwin-Hill duct insulation may be applied by any of the currently acceptable methods."

Dwyer Gauge Gives Direct Readings

—KEY NO. F-629—

MICHIGAN CITY, Ind.—One gauge that measures both air velocity in feet per minute and static pressure in inches of water is now available from F. W. Dwyer Mfg. Co. here, according to an announcement.

The company said the gauge was designed to meet on-the-job needs of heating, ventilating, and air conditioning servicemen and contractors.

It is described as a "low-cost, accurate, portable, easy-to-use unit that permits professional testing and foolproof adjustment of newly installed or repaired systems."

Readings of the gauge are direct, require no reference to graphs or tables. Two capacities cover common range of pressures. Model 400-5: 0 to 5 in. of water, 400 to 9,000 f.p.m. Model 400-10: 0 to 10 in. of water, 400 to 12,600 f.p.m.

This No. 400 Dwyer air velocity



meter is made of transparent plastic. It comes in 10½ by 20¼ by 1¼ steel carrying case custom-fitted for all accessories: 18-in. stainless steel calibrated pitot tube, rubber tubing with connectors, "Magneclips" for instant mounting to any metal surface, additional gauge oil, and plastic laminated instruction data cards, it was added.

'Inside-Out' Blower Motor Developed

—KEY NO. F-6210—

CLEVELAND—An "Intra-Drive" blower which utilizes a new "Inside-Out" motor in which normally stationary elements become the rotor to which the blower wheel is assembled and rotates around the fixed shaft and field assembly was introduced recently by Morrison Products, Inc.



The blower is dynamically balanced after assembly for quiet operation and minimum vibration, the company claims. Central location of motor in wheel allows a more uniform air distribution through the blower outlet, it was stated.

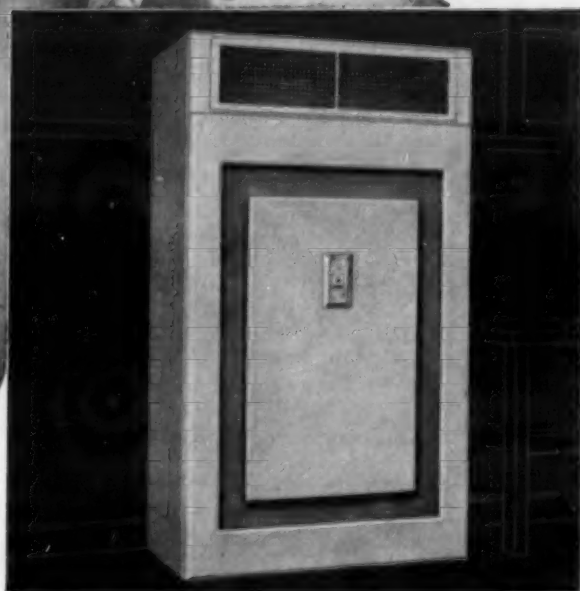
The unit provides capacities 500 to 1,500 c.f.m. at static pressures of .5 to 1.25 on either horizontal or vertical plane with four-way discharge positions, it was added.

You make more sales with

Gibson

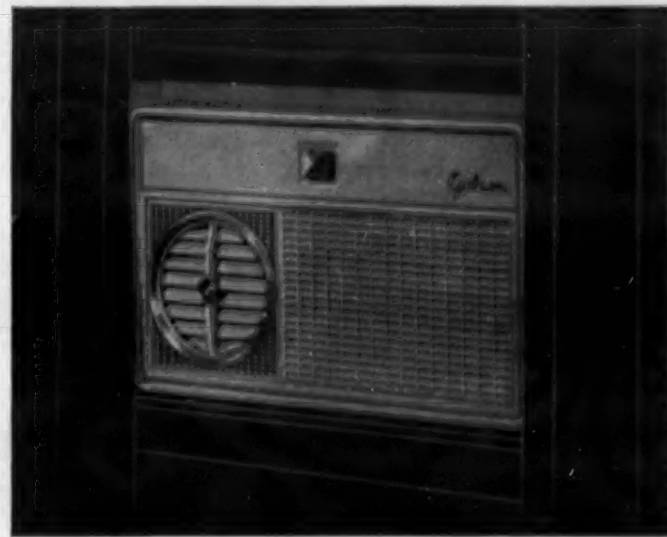
because Gibson gives more to your customers!

means more profit to you!



Here is large capacity air conditioning for businesses, and for homes where central air conditioning is desired. Gibson's extra capacity water-cooled condenser gives maximum efficiency with low water consumption. Adjustable air vents give flexible air distribution, and duct connections are convenient.

Available in 2, 3, 5 and 8 horsepower units, air cooled and water cooled in commercial (shown here) and residential models.



Take this Gibson Custom Air Conditioner, for instance! It has Gibson's new Infinite Control direction louver for no-draft circulation. Push Button Controls, of course, that control both cooling and circulation at either high or low speed. Permanent type electro-static dust magnet filter, and thermostatically controlled cooling. Exclusive Gib-Sun-Air Ozone Lamp freshens the air, removing stale odors.

Gibson window air conditioners are available in ¾ h.p., 1 h.p. and 2 h.p. Custom models and in lower priced Deluxe models with the same horsepower.

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Final Austin Village Report--

(Continued from Page 1)

had previously been spent on outside entertainment to escape the heat.

- Maintenance cost during warranty period averaged \$12, not counting initial adjustments. Failure of owner to clean filter causing coil to freeze was reason for most service calls.

- The builder should require a service contract from the heating and air conditioning subcontractor. The report spells out what should be in that contract. (Details later).

- For best results, constant air motion and relatively stable humidity conditions are desirable. These can be obtained through a non-cycling fan, quick draining coils, and "properly sized (not oversized) compressor that operates almost constantly.

- Wire sizes for compressor should be based on ampere ratings rather than stated horsepower.

- The difference between air-cooled and water-cooled condenser operating costs seemed relatively insignificant so far as averages for the two types are concerned.

- Year-round comfort in the home, with modern heating and cooling systems, is relatively inexpensive.

- Provision for "add-on" types of air conditioning is specifically recommended for low and medium priced homes.

The Austin Village project was carried out by the NAHB's Research Institute with the cooperation of a number of interested industry organizations, particularly the Air-Conditioning and Refrigeration Institute

and the National Warm Air Heating and Air Conditioning Association.

The Village consists of 22 homes built to sell for \$12,000 plus land, each with a different brand of residential air conditioning. The homes, were completed in June, 1954.

The homes and equipment, as well as the families living in the Village, were subjected to extensive research designed to test the performance of various design and construction types of air conditioning systems.

Research Objectives

Objectives of the research were to obtain initial construction and operating cost information on air conditioning and to provide technical data for sizing equipment, layout installation and operation, and home construction details for economical air conditioning.

Tests were carried out over

a period of one year to cover both the cooling and heating cycles. Certain cost data was secured for a two-year period.

The final report, which is available from NAHB at \$2 per copy, divides its data into the following categories:

Report Divided Into These Categories

Definition of comfort, general financing information, merchandising information, initial costs of air conditioning installation, operating cost, calculation of equipment size, installation and use of equipment, design and construction, and orientation of house.

In the first section, the report said that tests were conducted in the Village in an effort to determine the relative importance of the four principle elements producing comfort and the values which are desirable to

maintain in each one of them. The four elements are air motion, relative humidity, air temperature, and mean radiant temperature.

Tests were conducted in the afternoon and before dawn on 18 families.

At 77° F. with 50% r.h., all families reported discomfort with the air still and none reported discomfort with air in motion. Complaints were that they felt stuffy, sweating, or damp.

With air in motion at 77° F., no families reported discomfort with relative humidity at 30%, one family reported discomfort with relative humidity at 70%, and all were uncomfortable when relative humidity varied rapidly between these extremes. They felt stuffy.

With air in motion and 50% r.h., no complaints were made when temperature was 77° F. When temperature dropped to 75° F., three families complained; at 70° F., 14 complained. When temperature rose to 80° F., five reported discomfort and when it went to 82° F. all felt hot.

Mean Radiant Temperature Is Significant Factor

"Tests indicate that mean radiant temperature is a significant comfort factor in residential air conditioning," the report said. "It is apparent from the above data that low mean radiant temperature in itself cannot produce comfort due to the inability of radiant panel cooling to give air motion and to control humidity."

Insufficient data was obtained to directly relate mean radiant temperature to comfort except as related to windows and shading, the report observed.

Measurements were made of room of mean radiant temperature with a two sphere radiometer. Differences of three and four degrees produced significant comfort effect on occupants, the report said. Only awnings and reflective screens produced such differences, tests indicated.

White or aluminum venetian blinds, double glazing, or heat absorbant glass produced no difference in mean radiant temperature, it said. Fly screen produced a 1° F. difference.

Temperature Difference Between Inside and Out Had No Bearing on Comfort

Researchers reported that no difference in indoor comfort was noted when outside temperatures were 95° F. or 105° F., "thus indicating that temperature difference between outside and inside had no bearing on comfort in residential applications."

"Unanimous objections were raised in Austin by mothers of small children to night temperatures during summer months less than 72° F. due to problem of keeping children from becoming chilled when uncovered."

Under general financing information, the report noted that if air conditioning would add \$6 per month to mortgage payments, the purchaser would need \$30 more income per month to handle it.

"Thus builder must decide if the sales advantage of air con-

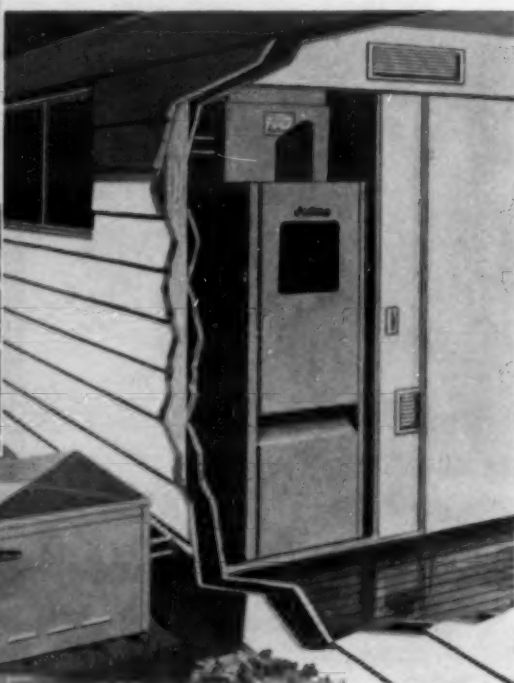
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Fast, easy installations! Airtemp gives you complete instructions cov-

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THE FORWARD LOOK



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For more information about products advertised on this page use Information Center, page 26.

Final Austin Village Report --

(Continued from preceding page)

ditioning is greater than the sales hardship of added income requirement," the report asserted.

Its recommendation: "The builder should evaluate the sales advantage of air conditioning, as well as the market he is aiming for, to determine whether he should offer an air conditioned home or whether he should use the add-on type of air conditioning which can be added or omitted at the time the sale is made.

Add-On Unit Best for Low Medium Priced Homes

"Specifically, a system for low and medium priced houses should generally be add-on type which can be added or omitted at the time sale is made.

"In custom or higher priced houses the builder has the choice between the add-on (split system) type and the self contained (central system)."

The report said that the in-place cost of year-round air conditioning includes six items:

1. Equipment cost.

Comment: Mass production will produce a downward trend in factory costs. However, for the near future, the addition of refinements and improvements may offset such a trend.

2. Installation cost.

"Direct labor cost for installation of heating and cooling equipment and air distribution systems (including ducts, registers, thermostats, electrical connections, etc.) for the Village averaged \$285. High was \$453 and low \$138."

The report commented that these figures were probably high due to single house installations. It noted that electrical installation was highest single item of cost and duct installation was second.

3. Cost due to interruption of normal construction program.

57 Man Hours Average Installation Time

Average installation time was 57 man hours, with a high of 91 man hours and a low of 28 man hours. This included all electrical and plumbing necessary for air conditioning except entrance wiring, and gas and water connections.

4. Cost of floor space (including unit size and access space required).

Average was 9 sq. ft.; smallest 6 sq. ft., and largest 14 sq. ft.

"At a nominal cost of \$10 to \$15 per sq. ft., the difference between high and low is \$80 to \$120," the report said.

It commented, "Lack of adequate space provision in the plan for proper access can increase installation cost far more than cost of space required.

"The builder is cautioned to allow space in addition to that required and manufacturers not already doing so are urged to provide front utility connections, thus eliminating this waste space."

5. Maintenance cost during warranty period.

Average was \$12, with a high of \$46 and a low of 0. This does not include experimental replacement or initial adjustments.

The report concluded, "Allowance by installing dealer or subcontractor of \$25 as a first-year service reserve (warranty) seems adequate in Austin or in comparable areas and houses.

"The builder should require a service contract from the heating and air conditioning subcontractor covering the following:

"a. Check installation, secure city code approval, check to correct voltage variations, etc.

"b. Start up equipment, balance system.

"c. Clean filter.

"d. Explain, orally or through pamphlet, the operation of system to owners.

"e. Provide responsible service for one year warranty period.

"f. Furnish (as part of service contract) all labor and materials necessary for repairs due to faulty equipment or installation affecting comfort of owners during warranty period."

6. Cost addition for special construction requirements.

This includes vapor seal for ductwork (required in crawl space or attic installation or other non-air conditioned spaces), insulation (nominal 4 in. in ceiling, normally none in walls), and electrical service. Electrical service means providing 20 amp. 3-wire, 220-volt branch service for 1,000 to 1,400-sq. ft. house (or as required).

Operating Costs Based On One-Year Period

Operating costs were based on a 12-month period from Oct. 1, 1954 to Oct. 1, 1955. The period was average for the area with 1,418 degree days of heating and 3,286 degree days of cooling. Cooling is based on degree days above 65° F.

In the 20 houses using electric compressor units, electric consumption for year-round comfort averaged 5,558 kwh., including 368 kwh. for heating. High was 9,873 kwh. including 839 for heating. Low was 2,520 kwh., including 122 kwh. for heating.

One house, the report said, required only 1,861 kwh. because both husband and wife work

and the unit was operated only at night.

Water consumption for water-cooled equipment averaged 10,860 gals. for the cooling season; high was 20,700 gals. and low 7,800 gals.

Average cost for year-round comfort at Austin rates were:

Electric—5,558 kwh. @	
\$0.016 equals	\$89.93
Gas—38,333 cu. ft. @	
\$0.0006 equals	23.00
Water—10,860 gals. @	
\$0.00025 equals	2.72

Total \$115.65

Or \$9.64 per month average.

The single gas absorption unit had a cost record as follows:

Electric—1,463 kwh. @	
\$0.016 equals	\$23.41
Gas—138,000 cu. ft. @	
\$0.0006 equals	82.80
Water—20,700 gals. @	
\$0.00025 equals	5.17

Total \$111.38

Or \$9.28 per month average.

The report commented: "High and low operating costs figures probably vary to a greater degree in this study than would normally be expected because an inherent part of the study was the testing of certain designs and materials that produced wide variation in heat gain.

"As a matter of fact, the average operating cost is higher than could be achieved since certain high heat gain designs were deliberately incorporated in some of the units to secure test data. For this and other reasons operating costs

are not comparable between the above electric and gas energy units or between the individual electrical units.

"Based on the Austin Village study, the average electric energy requirement during the cooling season is equal to 283 kwh. per 1,000 B.t.u.h. calculated heat gain, based on 1955 National Warm Air Heating and Air Conditioning Association Manual 11.

"It should be recognized also that the cooling season in Austin is longer and the daily temperatures are higher than most of the country. The amount of energy required for cooling would be reduced proportionately where milder climates result in less hours of equipment operation."

The report noted that heat loss and gain calculations and air distribution systems are essential for proper sizing of equipment and integration into house design. It told builders that the air conditioning industry is working diligently in an attempt to obtain agreement on a single simplified method of heat gain calculation.

It said that many methods, varying widely in results, are used for calculating heat gain. Calculated average heat gain for the 22 houses in Austin Village by the 1954 Manual 11 method was 24,437 B.t.u.h., while by the 1955 Manual 11 method it was 18,815 B.t.u.h. The actual average heat gain at datum day under design conditions was 16,400 B.t.u.h.

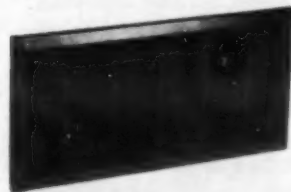
(To Be Continued)



WHY
SELL
HALF
AN

Air Conditioner?

Cooling is only part of the job of air conditioning. True air conditioning should also include purification, removal of dust and pollen, elimination of odors and stuffiness. Smog or any pollution from outside air should not be allowed to seep in, and tobacco smoke should be rendered non-irritating. Only then is an air conditioner really living up to its name. The easy way to transform a room cooler into an air conditioner is to replace the ordinary dust filter with a DACOR (Disposable Activated Charcoal Odor Remover).



New Dacor exposes tremendous surface area of highly Activated Charcoal to air stream, picks up odors, tobacco smells, other contaminants instantly. Lasts full season in average use. Has own built-in dust filter.

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world's largest producer of odor removal charcoals

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AUTOMATICALLY
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To connect a Hansen Two-Way Shut-Off Coupling, you just pull back the sleeve and push the Plug into the Socket. To disconnect, merely pull back sleeve. No tools required. Similar valves in Socket and Plug shut off both ends of line when Coupling is disconnected—practically eliminate spilling of liquid or escape of gas at instant of disconnection.

FEMALE PIPE THREAD CONNECTIONS FROM 1/8" TO 1"

Hansen Series HK Two-Way Shut-Off Couplings are available with female pipe thread connections from 1/8" to 1" inclusive. Available in brass or steel.

Also Straight-Through and One-Way Shut-Off Couplings. Write for Catalog.

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Emergency Diagnosis, Repair of Hermetic Unit Electrical Components (4)

Checking Very High Capacitance of Capacitor, Checking Motor Overload Described by Zant

This is the fourth and final instalment of the discussion by John L. Zant, representative of Copeland Refrigerator Corp., on what each component of the electrical circuit is supposed to do and how to diagnose difficulties.

There's absolutely no need for a serviceman to be stumped by electrical troubles on hermetic units, Zant points out. With a little effort the serviceman can learn the functions of electrical components and some temporary repairs that can be used in an emergency.

Zant has given the following talk and demonstration before various groups.

By John L. Zant, Copeland Refrigeration Corp.

11. Checking m.f.d. of a capacitor.

We earlier talked about both running capacitors and starting capacitors, explaining the function of each. As has been brought out and as is indicated in the wiring diagram, the starting capacitor is in the circuit only under the starting condition. But the running capacitor is in the circuit all the time the compressor is running. For this reason the starting and running capacitors are of different types.

Starting capacitors have very high capacitance (m.f.d.) for their physical size and are of the electrolytic type. Running capacitors are of the oil type and have relatively much less capacitance for their size.

Common Test Is Not Positive Check

Many servicemen test a capacitor simply by touching its leads to a line, then withdrawing the leads from the line and touching them together to see if a spark occurs. However, this is not a positive check. The capacitor might provide a spark and still be weak. With a voltmeter and ammeter, however, a positive test can be made, as we will demonstrate.

We will connect this running capacitor, rated 40 m.f.d. and 440 volts, to a line (voltage of the line should not exceed the voltage rating of the capacitor), read the voltage of the line and the current drawn (Fig. 5). We note the line voltage in this case is 230 and the current

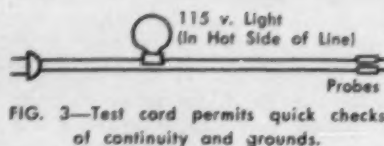


FIG. 3—Test cord permits quick checks of continuity and grounds.

which the capacitor draws is 3.5 amperes. The formula for m.f.d. (60 cycles) is:

$$\text{M.f.d.} = 2650 \times \frac{\text{Amperes}}{\text{Volts}}$$

Substituting the volts and amps we read,

$$\text{M.f.d.} = 2650 \times \frac{3.5}{230} = 40.4$$

Thus we know this capacitor is in good condition as it has a stamped rating of 40 m.f.d.

We could have tested this 440-volt capacitor on a 440-volt line, or even on a 115-volt line, just as well; the higher the voltage imposed the higher the current will be.

Test Readings Must Be Taken Quickly

In testing starting capacitors, however, they should not be left connected to the line for more than a few seconds. Readings must be taken quickly and the line then disconnected immediately or a burn-out will result. A test cord as illustrated in Fig. 3 should be used for these tests with a fuse inserted in place of the bulb in case the capacitor being tested should be shorted.

In connection with capacitors, we might mention also the use of substitute combinations in an emergency. If a serviceman does not happen to have an exact replacement on hand when a defective capacitor is found to be the cause of trouble, very often he can make up a combination from what capacitors he does have available which will provide the same result.

Very often the original equipment incorporates two or more starting capacitors and/or two or more running capacitors. For example, the 1-hp. 230-volt Copelametic in our demonstration equipment regularly incorporates two 115-volt starting capacitors connected in series. The larger sizes of Copelametics in many instances incorporate

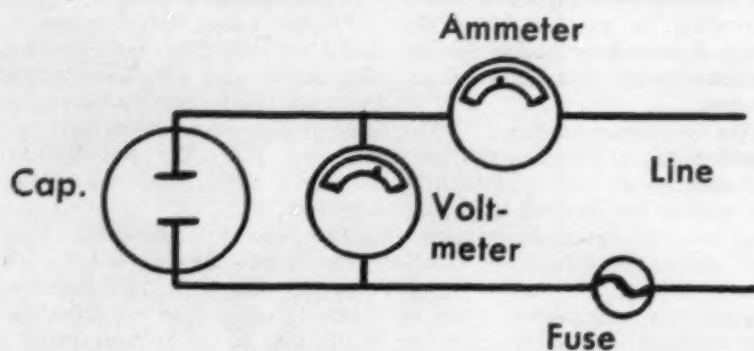


FIG. 5—Condition of capacitor can be checked accurately with ammeter and voltmeter.

capacitors connected in parallel.

When capacitors are connected in parallel, as illustrated in Fig. 6, the resultant capacitance (m.f.d.) equals the sum of the capacitances of the individual capacitors.

For example, two 230-volt capacitors, each 100 m.f.d., connected in parallel are the equivalent of a single 200 m.f.d. 230-volt capacitor.

Two Capacitors Connected In Series Illustrated

When two capacitors are connected in series, as illustrated in Fig. 7, the resultant capacitance equals the product of the capacitances divided by the sum of the capacitances of the individual capacitors.

For example, two 115-volt capacitors, each 100 m.f.d., connected in series are the equivalent of a single capacitor of 50 m.f.d. and in this case the equivalent of a 230-volt capacitor since each would have just half the voltage of the system imposed on it. When any two capacitors of equal m.f.d. are connected in series the resultant is the equivalent of a single capacitor of twice the voltage and half the m.f.d. of one of them.

When three or more capacitors are connected in series, the resultant m.f.d. may be determined from the formula:

$$\frac{1}{\text{M.f.d.}} = \frac{1}{C_1} + \frac{1}{C_2} + \frac{1}{C_3}$$

etc., where C_1 , C_2 , C_3 , etc., are the m.f.d. capacitance of the individual capacitors.

Knowing these formulae, a single capacitor can often be substituted for a combination, or vice versa, to provide the same effect as that of the original. It is important, however, to avoid excessive or under-capacitance in relationship to that specified. Maximum starting torque will result by using just the starting capacitance specified by the motor-compressor manufacturer. And maximum power factor (minimum current) will usually result by not deviating from the running capacitance specified by the manufacturer. Oversizing the running capacitor will also greatly increase the induced voltages and may cause rapid relay failure.

12. Checking motor overload.

As explained previously, this motor-compressor incorporates an "inherent" motor protector as do all single-phase Copelametics presently produced. This type of overload device protects against either over-current or excessive winding temperature or both.

Demonstration of Overload Operation

For a demonstration of the overload operation we will simulate a burned out relay, causing the starting winding to remain in the circuit. As we do (Concluded on next page)



YES, ORIGINAL EQUIPMENT STANDARD

REMCO E-Z-SEE LIQUID INDICATOR

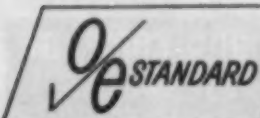
Remco's E-Z-SEE Liquid Indicator is Original Equipment Standard to dozens of manufacturers of automotive, residential, commercial and industrial air conditioning and refrigeration equipment.

The E-Z-SEE, guaranteed leak-proof, is the lowest price liquid indicator on the market. Only Remco gives your choice of spring-type or low cost hermetically-sealed indicators, in both brass and lower-cost cadmium plated steel.

These double-port, easy-to-see-thru units may also be had as flow indicators with flaps which respond instantly to flow variation.

Remco E-Z-SEE's range in size from 1/4-inch through 2 1/2-inch O.D., and are available with flare or sweat connectors. For any size or application, E-Z-SEE is standard for original equipment.

● ATTENTION, WHOLESALERS! Write today for Remco's O/E Standard Book for replacement parts your customers need.



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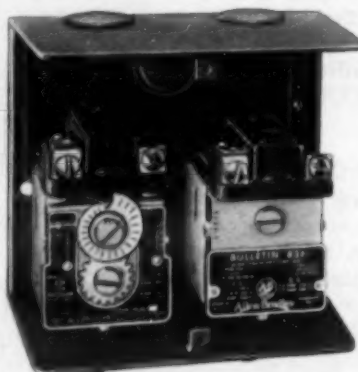
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Allen-Bradley Bulletin 836 cutouts are accurate, compact units which handle a wide range of pressure applications... from 30 inches of vacuum to 700 psi.

These precision switches have no "dead center" and no bearings to stick and cause delay in performance... switch action is positive, and the pure silver contacts are good for millions of operations.

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The Sign of
QUALITY
MOTOR CONTROL

ALLEN-BRADLEY
SOLENOID MOTOR CONTROL

Electrical Components - -

(Concluded from preceding page)
so, note the current drawn is 27 amperes, over five times the full load current rating of the motor. Compressor runs approximately eight seconds and overload trips.

Note that although the overload has tripped, stopping the compressor, the condenser fans continue to operate. They are connected on the supply side of the overload purposely to provide rapid cooling of the motor to get it back on the line as soon as possible.

As the motor winding and overload cool off, the overload soon resets and the motor makes another attempt to start. If the motor cannot start, or continues to draw excessive current, or overheats, cycling on the overload will continue until the cause of the trouble is corrected.

In conclusion, we hope the



FIG. 6—Capacitance of two capacitors connected in parallel is determined as above.

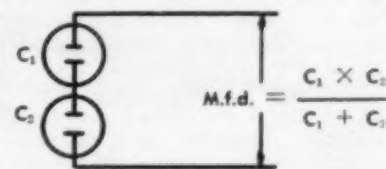


FIG. 7—Capacitance of two capacitors connected in series is determined as above.

foregoing has benefited each of you in some way, or will at some time in the future. Electrical troubles are not too difficult to analyze if one understands the function of each part of the system, does not go on the job with preconceived ideas of what's wrong and uses common sense.

Trouble and failures sometimes occur from the very simplest things: a loose connection, a grounded wire, or a broken lead. And all too frequently entire motor-compressors have been exchanged when all that was wrong was a loose connection, a weak capacitor, low voltage, a sticking relay, etc. Proper diagnosis would have saved considerable time and expense, and greatly enhanced the reputation of the serviceman.

Do Not Try To Modify Electrical System

There is one other precaution we wish to pass on to all of you. Please do not try to modify the electrical system and please do not arbitrarily step up the overload, or short circuit it, when it trips. The overload is in the system just for that purpose—to stop the compressor when further operation would be dangerous for the motor.

All the electrical components we have explained make up a system. The electrical system is designed as a unit and each component is directly related in its operation to the other items of the system. To alter one part affects the operation of some-

thing else. For example, to add a running capacitor to a system incorporating a motor designed as an induction-run motor is only inviting trouble. If the motor does not fail the relay probably will.

The same thing should hold true of adding starting capacitors to split phase motors and replacing relays with some other type. The odds of obtaining a balanced, trouble-free system are really slim.

Actually, with proper application of the equipment, clean and dry systems, adequate wiring to and within the building and use of recommended motor protection, the percentage of failures is extremely small. But for the few cases where troubles do occur, often beyond the control of the equipment manufacturers, we hope the foregoing information will provide the means of your arriving at the proper remedy.

(The End)

G-E Launches National Promotion Of Appliance Service

LOUISVILLE, Ky. — Recent nationwide editorial attention to consumer service problems has prompted General Electric Co.'s appliance and television receiver division to schedule a national advertising campaign promoting its appliance service, it was announced.

The campaign will be launched on June 2, according to a G-E publication. It is planned to run ads a minimum of 12 times in *Life* and the *Saturday Evening Post*.

The initial ad asks the reader, "How do YOU feel about appliance service?" On one side of the ad is a drawing of a sad-faced woman and on the other a drawing of a woman with a big smile.

"If your major appliance carries the General Electric nameplate," copy says, "there's no need to be bothered or bewildered" (when an appliance stops operating).

It advises the housewife to call her G-E factory-trained technician, the report concluded.

Service Plans, Policies, Improved Methods Outlined At Detroit In Copeland Educational Service Meeting

DETROIT—A Copeland educational service meeting, held recently at the quarters of J. M. Ober, Inc. here, wholesaler for Copeland Refrigeration Corp., drew a large turnout of industry sales and service people, who were told of new company service plans and policies, as well as getting a picture of improved service methods.

The meeting was one in a series being conducted throughout the country by Copeland in cooperation with its wholesalers.

Speakers were Dale H. Bodine, manager of educational services for the manufacturer, and A. E. Cadwell, Copeland's Michigan representative.

Opening the meeting, Cadwell briefly covered the company's line of motor-compressors, compressors, and condensing units. He referred to "spec" sheets, copies of which were distributed to the audience along with a service manual on "Copelametic" units.

Cadwell also discussed Copeland's plant expansion program, and steadily rising sales volume.

Also touching on industry trends, Bodine noted the popularity of open-top island display cases, the increase in home air conditioning, the growth of motels, and the expanding markets for auto air conditioning and truck refrigeration, all of which call for new products, and new service policies.

Bodine also pointed out that the company has a new materials control program set up by Ernst & Ernst for continuity of the flow of materials, which will assist in keeping delivery commitments.

Noting, too, that Copeland has a new service shipping department, he said the company is aiming for a "bank" of 3,000 to 4,000 compressors for service replacement needs.

The speaker then showed and discussed slides on dismantling a motor-compressor assembly; coil circuit; various electrical circuits and testing methods; wiring diagrams; hermetic condensing unit service chart showing symptoms, cause, and remedy; and a number of models in Copeland's line.

In discussing service problems, Bodine noted that occasionally, double-tube condensers are damaged because of freezing. This may not be due to exposure to freezing weather but may be the result of an internal or external refrigerant leak, he indicated. The freezing temperature causes the water to freeze and the damage is done by the expansion of the water and ice.

"If you want to blow the charge out of a double-tube condenser," he explained later, "blow water out first with air. Then, blow the charge out and the absence of water will prevent freezing."

DETECT LEAKS

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SOLDER
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REFRIGERATION AND AIR CONDITIONING OUTFIT

This air-acetylene outfit easily handles all your soldering, heating, and leak detecting work. No liquid fuel to spill. No pumping, priming, or wasted time. The three open flame stems and halide gas leak detector unit are instantly interchangeable on a common handle. One handy kit with a flame for every job. See your LINDE jobber for a demonstration. Or write LINDE AIR PRODUCTS COMPANY, a Division of Union Carbide and Carbon Corporation, 30 East 42nd Street, New York 17, N. Y. In Canada: Union Carbide Canada Limited, Toronto.



Fully adjustable gas pressure regulator insures perfect flame control. Torch handle has shutoff valve and built-in pilot flame control for convenience and economy.

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SHAFTS by MODERN

Shafts by Modern now power compressors for the leading lines of commercial refrigeration and air conditioning units. For precision SHAFTS, in quantity, consult us. Send blueprints for quotation.

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Modern Machine Works, Inc.

Pioneers in Shaft Manufacture

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For more information about products advertised on this page use Information Center, page 26.

Marsh Presents...

The one and only
water valve
for both
F-12 and F-22



Yes, you can adjust this new water regulating valve from 60 to 270 pounds by simply twisting that knurled cup at the bottom... so now you have one valve that will function equally well on either Freon 12 or Freon 22.

It's new and better in every way: Small and Compact, but with plenty of capacity, smooth modulation, positive operation, excellent flow characteristics. Valve may be manually flushed after installation to remove dirt and grit from line.

Quality construction throughout: Monel seat beads minimize wire drawing and prolong life. Direct acting bellows is leak proof.

Write for bulletin pointing out other brand new features.

MARSH REFRIGERATION EQUIPMENT CO.

Sales affiliate of J. P. Marsh Corp.

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Buy from
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Cochrane Describes Hydromatic Valve

—KEY NO. R-620—

PHILADELPHIA — Cochrane Corp. recently issued publication 5813 which describes the firm's hydromatic valve used in control of demineralizers, "Zeolite" softeners, dealkalizers, and pressure filters.

Design features are described, along with operation and advantages the company claims the valve offers.

'Anemotherm' Air Meter Described In Folder

—KEY NO. R-621—

NEW YORK CITY—Anemostat Corp. of America here recently issued bulletin No. 55 covering the firm's new "Anemotherm" air meter used to balance air conditioning, ventilating, and heating systems.

The four-page colored folder illustrates and explains functions of the pushbutton model 60 balancing device.

Bulletin Describes Low Temp Cabinet

—KEY NO. R-622—

INDIANAPOLIS—The Webber Engineering Corp. has recently issued a specifications sheet on its sub-zero temperature cabinet Model WE-2-140.

Bulletin No. 61 describes the 2 cu. ft. unit with front or top opening for testing electronic components, cold treatment of metals, and thermal contraction and expansion fitting.

Temperature range is from ambient (110° F.) to -140° F. Temperature control is visible, adjustable, and accurate to plus or minus 1° F.

Peerless Illustrates Air Conditioning Uses

—KEY NO. R-623—

CHICAGO — Illustrated bulletins containing specifications, drawings, and typical uses of its line in air conditioning installations were published recently by

Peerless of America, Inc.

CX155 pertains to cooling and heating units with "Hi-F" coils, series "CXF" and "CXW." Bulletin ACW155 covers series "6RW" water coils. NW155 illustrates series "NW" air-cooled condensers, and bulletin AC155-1 describes series "4-R" standard 4-row air conditioning coils.

Peerless "Weather Beam" ductless type air conditioner for connection to remote cooling system or remote heating system is detailed in bulletin WB156. WBD156 provides a description of duct type air conditioner for connection to remote heating or cooling system, it was noted.

Ideal Brochure Covers Refrigerated Case Line

—KEY NO. R-624—

BROOKLYN—Ideal Store Fixture Co., Inc. recently published its 1956 color brochure on the self-service frozen food, double-decker dairy, refrigerated produce, and meat cases.

Complete with specifications and

other information, the brochure also includes descriptions of display cases, counters, stands, shelving, and other integral food market items.

Republic Outlines Kitchen Planning

—KEY NO. R-625—

CANTON, Ohio—Basic kitchen planning is outlined in a new booklet recently issued by Republic Steel Kitchens, Republic Steel Corp.

Entitled "Planning Your Kitchen Layout," the booklet explains function, sequence, and relationship of various work centers and how they fit together.

The primer describes three basic work centers, sketches foodstuffs and household items to be stored in the centers, shows four basic kitchen layouts arranged in "work triangle," door, window, or odd wall angle variations, island layouts, and built-in planning.

Back cover is ruled to enable the user to rough out a kitchen plan.

AAF Describes Office Building Maintenance

—KEY NO. R-626—

LOUISVILLE, Ky.—How an office building effected a savings of more than \$18,000 a year in maintenance costs is told in a new product bulletin released by American Air Filter Co., Inc., manufacturer of air filter, dust control, and heating and ventilating equipment.

Bulletin No. 250-A-1, entitled "The New England Life Electromatic Story," tells of the maintenance problems encountered by the manager of the New England Mutual Life Insurance Co. building in downtown Boston. Mechanical air filters were installed when the air conditioned landmark was constructed in 1940.

"There was difficulty in maintaining a bright, clean appearance of draperies, furniture, and similar appointments," American Air Filter said. "Those filters served by the sidewalk intakes were exposed to an unusually heavy dirt load which prevailed at street level.

"In 1947 the mechanical filters were replaced by nine systems of 'Electro-Matic' self-cleaning electronic precipitators.

"The results were immediately apparent. Smoke and fine dust (the primary cause of discoloration) were eliminated, cleaning costs were reduced, and, as a result, the cleaning staff of the building was reduced by 20%.

"In the 5½ year period since the Electro-Matics were 'paid for' in savings, the dollar savings in maintenance costs due to the use of the electronic filters have amounted to a staggering \$99,000."

Reznor Catalog Covers Gas-Fired Furnace Line

—KEY NO. R-627—

MERCER, Pa.—A comprehensive catalog, GN-56, covering the full line of gas-fired commercial and industrial heating equipment recently was published by Reznor Mfg. Co. here.

Equipment shown includes suspended gas unit heaters, both fan and blower types, deluxe suspended unit heaters, "Flexitemp" floor model heater, two series of duct furnaces, and the "PAC" horizontal furnace.

In addition to complete specifications, construction details, and large dimension drawings and tables, the catalog also includes installation information and application ideas, the firm stated.

Vibration Monitors, Detectors Cataloged

—KEY NO. R-628—

RICHMOND, Va.—A new four-page bulletin (500-1A), released by The Beta Corp. here, describes its line of manually reset vibration monitors and malfunction detectors.

Included is detailed information on how vibration monitors detect malfunctions in rotating equipment and how the devices are installed and adjusted. The bulletin includes half-tones, dimensional drawings, and tabulated features on standard, oil-tight, and explosion-proof models.

Drayer-Hanson Issues HRC Conditioner Sales Bulletin

—KEY NO. R-629—

LOS ANGELES—A ready-reference sales bulletin was recently published by Drayer-Hanson, Inc. covering its line of HRC "Spot-aire" series of year-round air conditioners designed for commercial-institutional applications.

Charts, giving dimensions, selection and performance data, and full specifications added to illustrations of a recent installation round out the information piece.



This seal is your assurance of a successful installation every time

The American Blower Packaged Air Conditioner that bears this seal is the result of American Blower's 75 years' experience as a leading producer of air-handling and conditioning equipment. And it's your customer's assurance of years of trouble-free air conditioning. Get all the details today on how easy and profitable it is to handle the attractive, competitively priced American Blower Packaged Air Conditioner. Write American Blower Corporation, Detroit 32, Michigan.

DISTRIBUTORS: Choice, protected territories still available — without investment in carload lots or tie-in products — call or write today.

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What's your product's RF* in the board room? (* recognition factor)

If you have been advertising in the NEWS—the chances are that over 93% of the air conditioning, heating, and refrigeration manufacturing executives who make the buying decisions have read your sales story. Here's why!

A recent readership study of a random sampling (135) of NEWS subscribers in the complete unit manufacturing field shows that more than 93% of all department heads regularly read—and clip—AIR CONDITIONING & REFRIGERATION NEWS. Said one executive: "By the time I get through with (the NEWS) it is usually pretty well cut up by clippings. Fortunately, we get numerous other copies in this division." As important as these survey results were to the NEWS, they are even more important to you as an OEM supplier.

A glance at the following breakdown of the sampling will show how important the NEWS is to the men you want to sell.

DEPARTMENT	NO. OF READERS	% DEPARTMENT HEADS
Chief Executives	63	
Sales	132	100%
Engineering	118	96%
Purchasing	32	100%
Service	58	77%
Production	50	93%
Advertising	48	89%
Promotion	19	100%
Total Readers In Sampling:	520	
AVERAGE READERS PER COPY: 7.4		

Yes, mighty important men. Busy men. Difficult to contact men. If you want to tell your product story to them—these men who control the purchasing power of the industry—the place to do it, obviously, is in the NEWS. Then you know it will be read by the people who make the decision to buy. So do your first job where the first job is being done—in the NEWS.

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LOS ANGELES, 4710 Crenshaw Blvd., AXminster 2-9501, Justin Hannon.
DETROIT, 450 West Fort St., WOodward 2-0924, Joe Sullivan.



For more information about products advertised on this page use Information Center, page 26.

Refrigeration Problems And Their Solution

By Paul Reed

For Service and Installation Engineers



Comparison of Refrigerants 12 & 22

(Continued)

COMPRESSION RATIOS

The ratio of compression (see Table 5) is found by dividing the head pressure by the suction pressure, both expressed in pounds per square inch absolute.

A high ratio of compression is undesirable, as it tends to increase the cost of operation and the original cost of the equipment, particularly the compressor, which must be made with

closer tolerances in order to avoid loss of efficiency. However, there is so little difference in their compression ratios, that it does not affect a choice between 12 and 22.

REFRIGERANT CIRCULATED

The net refrigeration effect (see Table 6) is the measure of cooling that one pound of liquid refrigerant can accomplish. It varies, of course, with the temperature of the liquid entering the expansion valve and the temperature of the evaporator. In itself, the net refrigerating

effect is important only as it affects the amount of refrigerant that must be circulated in order to produce a certain amount, say a ton of refrigeration, which is 200 B.t.u. per minute. Thus, if we divide 200 by the Net Refrigerating Effect, we get the weight of the refrigerant that must be circulated per minute in order to produce a ton of refrigeration of 200 B.t.u. per minute.

However, it is the volume of the refrigerant circulated that we are mostly interested in, so we must also consider the densities of the liquid and vapor. When we do this for 12, we find that 83.9 cu. in. of liquid per minute must be supplied to the evaporator to produce a ton of refrigeration at standard ton conditions of 86° condensing and 5° evaporating, while only 68.0 cu. in. of liquid 22 are required.

TABLE 5

Ratios of compression of 12 and 22 at several typical evaporating and condensing temperatures.

Ratio of Compression Pc/Ps	12	22
86° Condensing 5° Evaporating	4.07	4.06
90° Condensing -40° Evaporating	12.3	12.1
90° Condensing 0° Evaporating	4.8	4.8
90° Condensing 40° Evaporating	2.2	2.2
100° Condensing -40° Evaporating	23.7	23.0
100° Condensing 0° Evaporating	9.2	9.1
100° Condensing 40° Evaporating	4.3	4.2

10 is generally regarded as Permissible Maximum. Condensing, 5° F. Evaporating.

TABLE 6

Comparative properties of 12 and 22 that directly affect the weight and volume of refrigerant circulated per ton of refrigeration.

	12	22
Net Refrigerating Effect—B.t.u./Lb.	51.1	69.3
Refrigerant Circulated—Lbs./Min.	3.92	2.89
Density of Liquid at 86° F.—Lbs./cu. ft.	80.63	73.36
Volume of Liquid Circulated—cu. in./Min.	83.9	68.0
Density of Vapor at 5° F.—Lbs./cu. ft.	.6735	.8034
Volume of Vapor Circulated—C.F.M.	5.81	3.60

Above at Standard Ton Conditions of 86° F.

This has practical significance, for it means that at standard ton conditions, the liquid line must be about 23% larger for 12 than for 22. This affects the original cost of the tubing or piping, and to some extent the cost of erection.

In the vapor phase in the evaporator and suction line, we find that the difference in the volume of saturated vapors of 12 and 22 is greater than the difference in the volume of the liquid. The volume of vapor circulated is usually referred in terms of compressor displacement, for it is the theoretical volume of the compressor cylinders in cubic inches per minute, required to compress and circulate the vapor from the evaporator. The actual displacement is affected by the superheating of the vapor in the evaporator, heat-exchanger and suction line, and by the efficiency of the compressor, and in practice is from 1/3 to 1/2 greater than these theoretical values.

SMALLER COMPRESSOR FOR 22

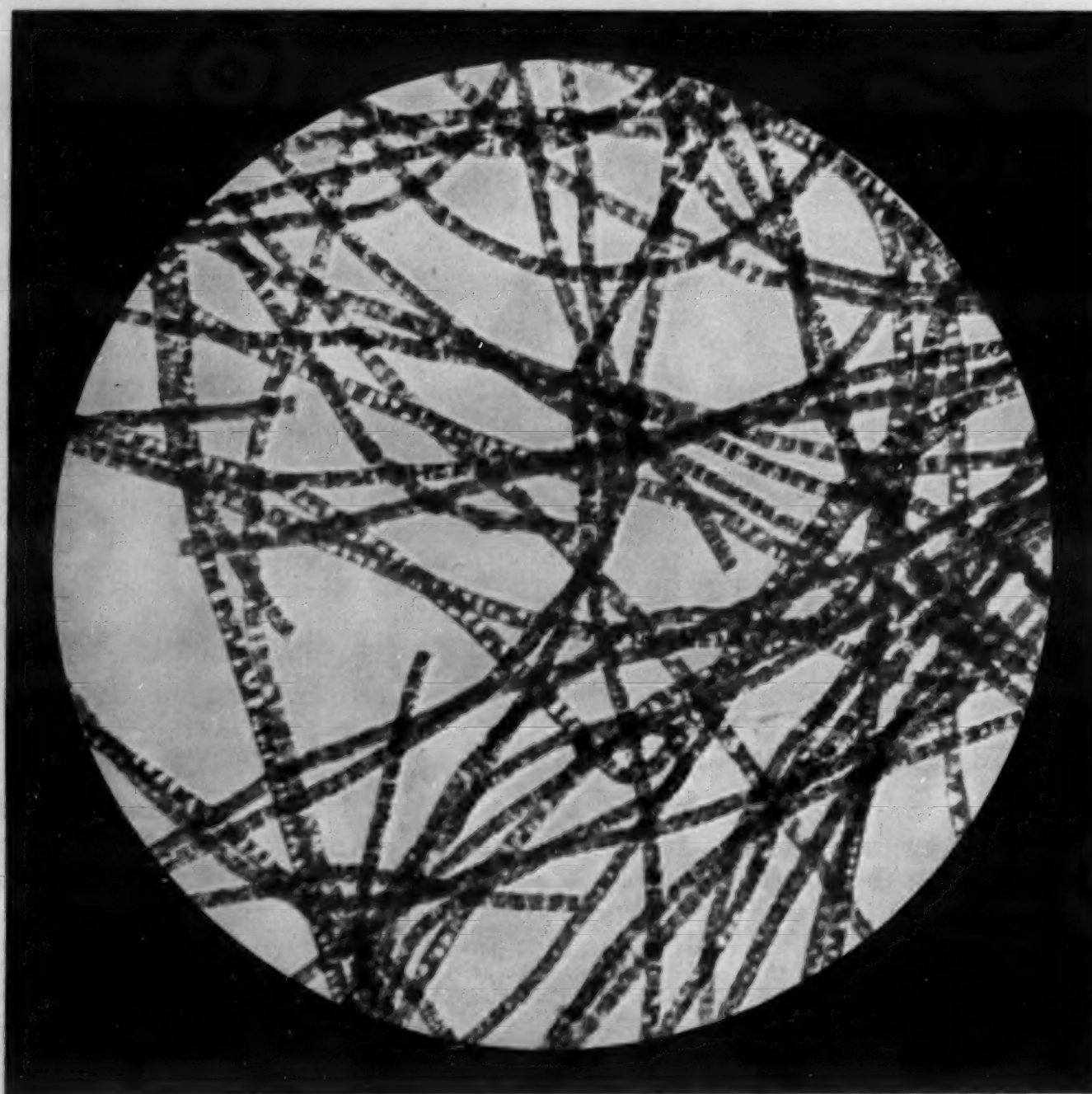
If we compare the compressor displacement for 12 and 22, we find that the compressor for 22 need have only about 5/8 the displacement of a compressor for 12, assuming standard ton conditions of 5° evaporating and 86° condensing for both. The same ratio does not hold true at all temperatures, but the 22 compressor can be much smaller under all conditions.

This is an important point, for displacement affects size, and size affects cost. Moreover, compressor size must be considered in package units, where space is an important factor; for the larger the compressor the larger the condensing unit and the greater its cost; and in the self-contained cabinet the larger is the useful space that must be allotted to the machine, and the greater the cost of the cabinet.

The reduction in compressor size and cost has been the major consideration that has led manufacturers of self-contained and packaged equipment to use 22. This is particularly true in the case of equipment having evaporator temperatures above -20°.

The smaller volume of gas circulated also allows the use of smaller suction lines in about the same ratio as compressor

(Concluded on next page)



Algae such as these are no problem in cooling towers treated with "Virginia's" new algae-cides

Growth of algae occurs in every untreated reservoir of water exposed to sunlight. It is one of the common causes for loss of heat transfer efficiency. Of some 30,000 species of algae known to exist, one of the more common types found in cooling tower systems appears above in photomicrograph. You can control these and other algal growths with two new "Virginia" Algae-Cides.

Algae-Cide No. 1 is an organic copper compound many times more active than ordinary copper salts. Algae-Cide No. 2 is toxic also to bacteria; it is recommended for slime elimination, for mixed slime-algae infestations, and for copper resistant algae.

"Virginia" Algae-Cides No. 1 and No. 2 give you maximum algae control at low cost. Order from your wholesaler

today or write to Refrigeration Division, VIRGINIA SMELTING CO., 148 Jefferson St., West Norfolk, Va.



EBOTOO-KINETIC CHEMICAL'S "FREDON" REFRIGERANTS • V-METH-L CAN-O-GAS • PERMAGUM • PRESSTITE TAPE • KWIWRAP • SUNISO REFRIGERATION OILS • WATER TREATMENT CHEMICALS

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"Virginia" Water Treatment Products include Algae-Cides No. 1 and No. 2; Scale Remover; Scale Inhibitor; Ice Machine Cleaner.



\$Million Reason!

Expert Tells Why Atomic Furnaces Are Impractical for Residential Heating

CHICAGO — Atomic furnaces for home heating are impractical, according to Dr. Finn J. Larsen, director of research for Minneapolis-Honeywell Regulator Co.

They would cost about \$1 million, require concrete shield-

ing many feet thick, the fuel would have to be supplied by the government (which it isn't likely to do), and there'd be the serious problem of getting rid of the radioactive "ashes," Dr. Larsen told the National Warm Air Heating and Air Conditioning Association at its first technical conference held here at the Edgewater Beach hotel.

There is a possibility, however that atomic energy could be employed indirectly through electric generating plants scattered throughout a community, perhaps even piping heat from such reactors to homes in the neighborhood.

"About a year ago considerable publicity was given to a remark by an industrialist that a reactor in the home would be quite practical as a power source," Dr. Larsen commented. "Let us consider what a reactor is like and what the characteristics of nuclear power plants are."

"In the first place, a reactor is a comparatively simple device. It consists," he explained, "of fuel elements containing a material such as Uranium 235, the atoms of which are breaking down and producing two different things: neutrons, which can strike other atoms of Uranium 235 and continue the breakdown process, and heat. The heat energy is, of course, the useful product of a reactor."

"In a reactor we ordinarily have two other devices: a moderator, which slows down neutrons to a speed which keeps them from going completely through the fuel and not con-

tinuing the reaction, and control rods which are good absorbers of neutrons. When these rods are fully inserted in the pile, the activity is at a negligible level and no power is produced," Dr. Larsen said.

"The rudimentary reactor need not be large; in fact, it could probably be contained in a pressure vessel smaller than a 5-gal can. However, hazardous radiation would be coming right through the container, and heavy shielding is required."

"To minimize the cost of shielding, concrete rather than metal is used, and a thickness of many feet is required. Unfortunately, all of the contents

of a reactor become radioactive, and if we circulate pressurized water to a heat exchanger, or steam from the reactor to a small turbo-generator, the heat exchanger or turbine must also be behind the shielding.

"By the time we surround the reactor and the turbine or heat exchanger with many feet of concrete, we require an area probably larger than the entire basement of a home, and by the time we place thick concrete on top of the reactor and its associated equipment to shield the occupants of the home above, an ordinary basement is not high enough," he said.

Controls, safety devices, and radiation monitors would also be required, he indicated.

"Typical costs of all but the smallest reactors begin at about a million dollars," and Dr. Larsen added, "at the present time nuclear fuel may not be owned by private citizens, and it is

unlikely that the government would provide uranium for any one to heat or cool his home.

"However, we cannot assume that atomic fuels will not have an impact on the heating and air conditioning field," he cautioned. "Two entirely different factors need to be brought into consideration as background."

"The first is the growing electrical load in the average home. As current requirements increase and motor-driven refrigeration units are rapidly adding to this electrical load, it may become economical to have electric generating facilities in a number of locations in a city."

"The second consideration is that a reactor produces low grade heat—heat at a temperature of only 500° to 600° F. Therefore," suggested Dr. Larsen, "a reactor may be a more efficient source of community heating than it is as a source of steam for generating electricity."

Refrigerants --

(Concluded from preceding page) displacement. The saving in cost of the liquid line is usually not a significant factor.

The reduction in compressor displacement of 22 over 12 is not all pure savings, however. We cannot take a compressor built for 12 and use it for 22 just because it has enough displacement. With 22, the compressor is doing about a 60% bigger refrigeration job, so the heat loss in the compressor is about 60% greater, and the compressor for 22 must be able to dissipate this greater amount of heat. It should have greater surface area or it should have greater air circulation over it, or it may even be necessary to equip it with a water-cooled head or a water jacket.

Moreover, the pistons are pumping against a higher head pressure, so the bearing loads are greater. This requires larger bearings or better bearing materials, and perhaps larger rods. Are the valves and valve parts adequate for 22? Will the seal stand the higher temperature? Will the compressor overheat?

(To Be Continued)



Plenum type illustrated may be installed above or below furnace.

WILLIAMSON Waterless Wethermatic AIRrefrigeration units can be added quickly and easily to any residential or store forced air heating system. Choose from plenum, duct, counterflow, suspended horizontal or console types for efficient low cost operation.

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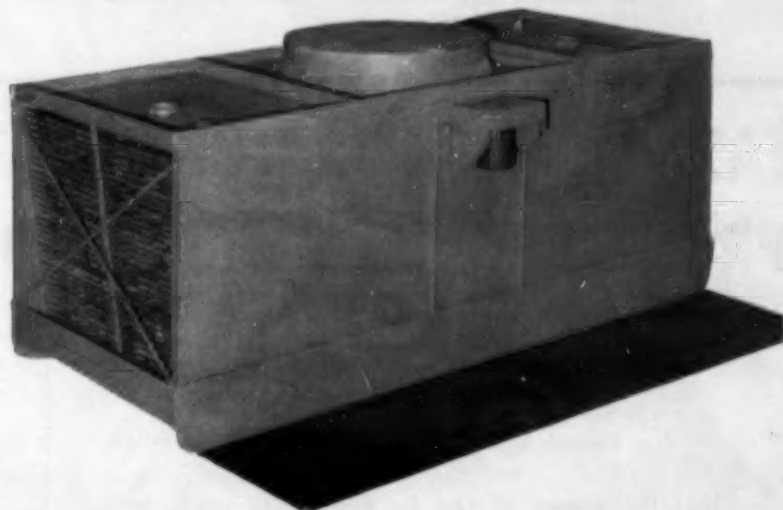
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As modern as today's architecture are the new Havens Verti-Flo Cooling Towers. Their low, sleek lines blend with building outlines, leaving no awkward projections rising above the roof.

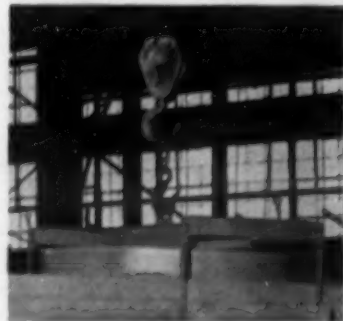


Available in 60 to 200 ton capacities, a Havens Verti-Flo Tower does a tremendous job for large installations. An unusual bearing design cuts maintenance time and costs, and each tower is protected inside and out from rust, corrosion, salt air and all water-treating chemicals by Havens Coat or a Hot Dip galvanizing process that follows fabrication.

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A hoisting yoke attachment greatly simplifies installation and shipping.

The unique design and construction of the Havens Verti-Flo eliminates the need for additional supports other than concrete or eye beams under the skids.



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and the 2 to 60 Ton 33 Series Cooling Towers

HAVENS COOLING TOWERS

Division of HAVENS STRUCTURAL STEEL COMPANY
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J. I. Carroll of Australia Dies after Appendectomy

SYDNEY, N.S.W., Australia—J. I. Carroll, managing director of Emmco, Pty., Ltd., died here recently following an appendectomy.

His firm, said to be Australia's largest producer of electrical products, manufactured household and commercial refrigeration products under Westinghouse licenses.

Carroll visited the United States often, and was widely known in refrigeration circles.

Government Contracts

SYNOPSIS OF PROPOSED PROCUREMENT

ARMY

Headquarters, Oklahoma City Air Material Area, Tinker Air Force Base, Oklahoma City, Okla. Attn: Procurement Division OCFPB.
OVERHAUL OF EVAPORATORS and CONDENSERS Building Nr 2001 Tinker Air Force Base, Oklahoma City, Okla.—Job—IFB 34-601-56-519B—Bid Opening 21 Jun 56. Plans and specifications available on request.
Purchasing Branch, New Cumberland General Depot, New Cumberland, Pa.
CONSTRUCTION OF COLD STORAGE REFRIGERATOR complete in warehouse number 1, section 2—Job—IFB 36-028-56-101B—Bid Opening 20 Jun 56.
Corps of Engineers, U. S. Army, Office of the District Eng., Chicago District, 475 Merchandise Mart Chicago 54, Ill.
INSTALLATION OF AIR-CONDITIONING SYSTEM in office space of North Central Division, Corps of Engineers, 536 S. Clark St., Chicago, Ill. in accordance with specifications and drawings furnished—Job—IFB CIVENG-11-032-56-55-B—Bid Opening 12 Jun 56.

NAVY

Schools Supply Officer, Marine Corps Schools, Quantico, Va.
The following items are procured under IFB 107-56(M)—Bid Opening 21 Jun 56.
UNIT, AIR CONDITIONER, sill type, 1/2 H.P., 115 volts, A.C., 60 cycle, single phase; to be Model 1675-2, as furnished by Chrysler Corporation, or equal, 55 ea.—UNIT, AIR CONDITIONER, sill type, 1 H.P., 208 volts, A.C., 60 cycle single phase, to be air cooled; to have built in thermostat, dehumidifier and 5 year protection plan; to be Model 1600-2 as furnished by Chrysler Corporation, or equal, 7 ea.—UNIT, AIR CONDITIONER, 5 ton, 208 volts, 3 phase, 60 cycle, water cooled with plenum, to have discharge grilles (front and side) and air intake grille; to include built in thermostat, humidity regulator and to be Freon 12 charge; to have 5-year protection plan; to have semi-hermetic or open type motor compressor; to be Brunner No. BAC-50 as furnished by Brunner Manufacturing Co., or equal, 11 ea.—UNIT, AIR CONDITIONER, 15 ton unit, 208 volt, 3 phase, 60 cycle, to be self-contained package unit water-cooled with plenum chamber; to have discharge grilles both front and sides air intake grille and 5 year protection plan; to have semi-hermetic or open type compressor; to have built-in thermostat and humidity regulator; to be Freon charged; to be Typhoon as manufactured by Typhoon Air Conditioning Company, Inc., and furnished by John T. Ellington, or equal, 1 ea.—TOWER, COOLING, blower type, outdoor weather-proof frames (a) 50 ton capacity, 7 1/2 H.P., Unidrive Motors, A.C., 3 phase, 208 volts, 60 cycle, 1 ea.

Navy Purchasing Office, 4th & Independence Ave., Washington, D. C., Attn: SFF-1A.

The following described items are procured under IFB 600-1944-56—Bid Opening 15 Jun 56.
AIR CONDITIONER, 1/2 HP, min. cap. 8200 btu per hr, 47 ea.—SAME, except 1 HP, min. cap. 11200 btu per hr, 16 ea.—SAME, except 1 HP, min. cap. 11200 btu per hr, 16 ea.—SAME, except with discharge plenum, 3 HP, min. cap. 37000 btu per hr, 4 ea.—SAME, except 5 HP, min. cap. 63000 btu per hr, 4 ea.—Spec MIL-A-16321A.

Officer in Charge, Navy Purchasing Office, Naval Supply Center, Norfolk, Va.
DISPENSER DRINKING WATER MECHANICALLY COOLED, Type I, size 10, 100 ea.—Type I, size 20, 8 ea.—Type II, size 10, 30 ea.—Type II, size 20, 2 ea.—IFB 189-806-56B—Bid Opening 19 Jun 56.

District Public Works Office, Eleventh Naval Dist., San Diego, Cal.
REFRIGERATION OF MEAT CUTTING ROOM and display additions at Sales Commissary, consisting of installing Government furnished Refrigerator and cases, altering meat track, electrical and related work, Marine Corps Base, Camp Pendleton, Calif. Deposit of \$25 required for plans and specs—Job—IFB 51337B revised—Bid Opening 23 Jun 56.

COOLING SYSTEM for Raydac Equipment, including installing New Fan, compressor, condenser, piping, insulation, electrical work, motors, foundations, cutting and patching and related work, Naval Air Missile Test Center Point Mugu, Calif. Deposit of \$25 required for plan and specs—Job—IFB-4113/56B—Bid Opening 22 Jun 56.

Commandant of the Marine Corps, Washington, D. C.
The following items are procured under IFB 346 B—Bid Opening 15 Jun 56.
REFRIGERATORS, mechanical, household, electric Type I, size 6 and 10, right and left hand door, Fed. Spec AA-R-211C and Amend. 1, 122 ea.—MACHINE, DISHWASHING, industrial double tank, right and left hand feed, Type IV, Model 225 DA, Interim Fed Spec OO-D-00431 (GSA-FSS) and Amend. 1 with exception, 22 ea.—DISPOSER, food waste and prewash assembly, Purchase Description with bid, 46 ea.

Following items are procured under IFB 352B—Bid Opening 15 Jun 56.
ICE MAKING MACHINE, cube, electric, self-contained, purchase description with bid, 20 ea.—REFRIGERATOR, ELECTRIC, self-contained, commercial, Type II, size 60, Federal Spec AA-R-211C and Amend 1, 22 ea.

AIR FORCE

Contracting Officer, Topeka Air Force Depot, Topeka, Kans.
AIR CONDITIONING GROUND TRAINING BUILDING, Building 321 in accordance with specifications Forbes-13-56—Job—FB 14-604-56-1128B—Bid Opening 12 Jun 56.

Purchasing and Contracting Office, Altus Air Force Base, Okla.
INSTALLATION OF AIR CONDITIONING in Building No. 400, Project No. C-8 2-56—Job—IFB 34-612-56-77—Bid Opening 12 Jun 56.

Warner Robins Air Materiel Area, Robins Air Force Base, Ga., Attn: Director of Procurement and Production.
FURNISH AND INSTALL COOLING TOWERS for Air Compressors (including towers, pumps, piping, automatic controls, safety devices, etc.) in fifteen bldgs at Robins AF Base, Ga.—Job—IFB 257B, local purchase—Bid Opening 12 Jun 56.

Base Contracting Office, Whiteman Air Force Base, Mo.
AIR CONDITIONING REMAINDER of Wing Headquarters, Whiteman Air Force Base, Mo.—Job—IFB 23-606-56-85—Bid Opening 14 Jun 56.

GENERAL SERVICES ADMINISTRATION

Business Service Center, General Services Administration, Region 1, Boston, Mass.
Brattleboro, Vt. U. S. Post Office & Court House, PARTIAL INTERIM AIR CONDITIONING FOR COURT ROOM—Job—IFB BOS-56-192—Bid Opening 6-15-56.

General Services Administration, Region 4, Business Service Center, 50 Seventh St., N.E., Atlanta, Ga.
AIR CONDITIONING FOR Court Room, Gainesville, Ga., Post Office and Court House—Job—IFB CR4-1342—Bid Opening 6-21-56.

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The NEWEST design in water-cooled refrigerant condensers. Used by major equipment manufacturers because of—these SELLING ADVANTAGES:



A TYPICAL CONFIGURATION—EFFICIENT, COMPACT, DESIGN

- Use 35% less water
- Cost reduced 30 to 40%
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- No internal joints
- Easy installation
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La Crosse . . . the most famous name in Commercial Refrigeration Equipment . . . leads the field with new products . . . a complete line . . . consistent quality . . . for faster, easier sales for you.

Sell the saving of the La Crosse Senior Kube King! Low, highly competitive purchase price plus year after year of dependable service equal more profitable sales for you. Kube King features: Approx. 3200 crystal clean Kubes (no holes) every 24 hours . . . 110 lbs. storage . . . only 6 qts. water per freezing cycle . . . automatic production start and stop . . . no float valves . . . uses less than 6 sq. ft. of floor space.



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KOOL 'KLOSET

Here's your chance to profit from the demand for low cost, extra refrigeration space . . . with the new Kool 'Kloset. This walk-in, reach-in cabinet is ideal for all 'round storage of countless items and it's priced right to open up new markets for you.

Features galore! La Crosse self contained refrigeration system . . . grey baked enamel exterior, 3" spun glass insulation, rugged hardware with inside release, available 34" and 62" widths.

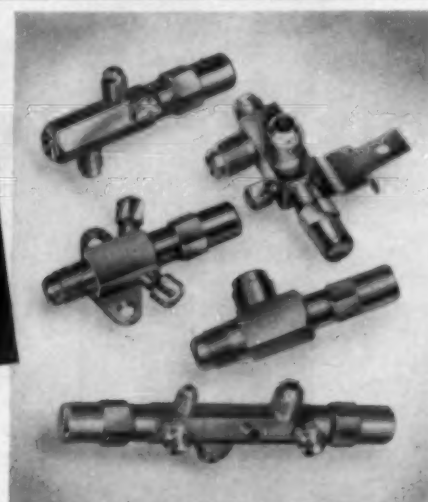


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Every Primore valve has many years of refrigeration and air conditioning know-how behind it. They're precision manufactured, yet, because of hydrogen brazed steel construction and high volume production are lower in cost.

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2 Firms Agree To Drop Appellation 'Warehouse' In Interstate Trade

WASHINGTON, D. C. — The Wholesale Furniture Warehouse, Inc., Mobile Ala., and the Wholesale Furniture Warehouse, Inc., Gulfport, Miss., have agreed with the Federal Trade Commission that in connection with sale of furniture and appliances in interstate commerce they will stop representing that they are wholesalers.

A stipulation agreed to by the companies states that, in the opinion of the commission, the names imply that the companies are wholesalers when it appears this is contrary to fact.

In addition, the stipulation states, the companies have advertised: "Buy Furniture at Wholesale" . . . "Buy Direct From Warehouse and Save . . . at Wholesale" . . . "Nationally Advertised Furniture and Appliances at Wholesale."

The companies also have agreed not to represent that their prices are wholesale.

Joining in the agreement are two officers of the firms: Leon York and John C. York.

This stipulation is for settlement purposes only and does not constitute an admission by the parties that they have violated the law.

Tillotson, Pawlyk Join Pennsalt Div. Staff

PHILADELPHIA — David S. Tillotson and Peter Pawlyk have joined the staff of Pennsylvania Salt Mfg. Co.'s Technical Div. and have been assigned to its Sales-Services Dept. under the direction of William M. Lee.

Both will specialize in the technical applications of Pennsalt's new "Isotron" areosol propellents and refrigerants which will be produced in a new organic fluorine plant scheduled for completion late this year at Calvert City, Ky.

Pawlyk, who has numerous patents to his credit, formerly headed the Rectifier Research and Development Laboratories of B. R. Mallory Co., Indianapolis. He holds degrees from Alma college and Michigan State university and did graduate work at Columbia university. He will specialize in the application of Isotron refrigerants.

Tillotson, who received his academic training at Wooster college, John Hopkins, and Ohio State universities, and before his recent appointment was chief chemist of the Aerosol Div. of John C. Stalford & Sons in Baltimore, will work with Pennsalt Isotron areosol propellents.

Griffith Distributing Goes Out of Business

CINCINNATI — Griffith Distributing Co., 2410 Gilbert Ave. is terminating business, it was announced May 25 by the board of directors.

The company, headed by Charles W. Hyde, president, was started in 1929, and is local distributor for Fedders air conditioners, Youngstown, RCA, Eureka, Armstrong, and Duo-Therm products.

Cadillacs Awarded to 6 Norge Distributors

CHICAGO — Norge distributors in Atlanta, Detroit, Hartford, Conn., Houston, Knoxville, Tenn., and Nashville are inventorying new items—1955 Cadillac Fleetwoods.

The automobiles are prizes in the "Fleetwood Handicap" contest, results of which were announced recently by the Norge Div., Borg-Warner Corp. here.

Winners included Hopkins Equipment Co., Atlanta; Radio Distributing Co., Detroit; Post & Lester Co. of Hartford, Inc., Hartford, Conn.; Automatic Distributing Corp., Houston; Valley Appliances, Inc., Knoxville, Tenn.; and Moore-Handley Hardware Co., Nashville.

Points were awarded for obtaining new dealers and for increasing dealers' product line coverage. Distributors competed in six divisions.

Bendix-Westinghouse -- Ranco Stock --

(Concluded from Page 1, Col. 3) tive air brakes it has appeared to us," the officials said, "that the manufacture of refrigeration and air conditioning components would be a suitable field for such diversification."

For the past year, the company has been developing and testing products for this market.

"To further strengthen our eventual position, we have also been considering acquisition of a company already in the market," the officials reported. "We have been in contact with a number of such companies, including Brunner Mfg. Co. of Utica, N. Y."

The officials said that "at this time, however, no agreement has been reached with any companies under consideration."

Bendix-Westinghouse is a joint venture owned 51% by Bendix Aviation Corp. and 49% by Westinghouse Air Brake Co.

(Concluded from Page 1, Col. 4)

pected to be made by an underwriting group headed by Smith, Barney & Co. American Motors currently holds 21.7% of Ranco's outstanding million shares.

American Motors at one time owned 616,950 shares or nearly 62% of Ranco's common stock. Last November it sold 400,000 shares at \$20 a share to the public. The stock is said to be selling now at about the same price.

Ranco is said to be planning to apply for a listing on the New York Stock Exchange.

Ranco's net profit for the six months ending March 31 was \$1,413,987 or \$1.41 per share, on sales of \$14,061,543. This compared with a profit of \$1,162,830, or \$1.16 per share, on \$11,374,140 in sales during the comparable period a year ago. Ranco manufactures tempera-

ture and pressure controls for the refrigeration and air conditioning industry and for automobile heaters.

George B. Bright, Sr. Dies of Heart Attack

CORAL GABLES, Fla. — George B. Bright, Sr., a past president of the American Society of Refrigerating Engineers, died recently of a heart attack while flying over Atlanta. He was buried here June 6.

Bright, who was 73 years old, was founder and president of the Detroit Ice Machine Co. in Detroit.

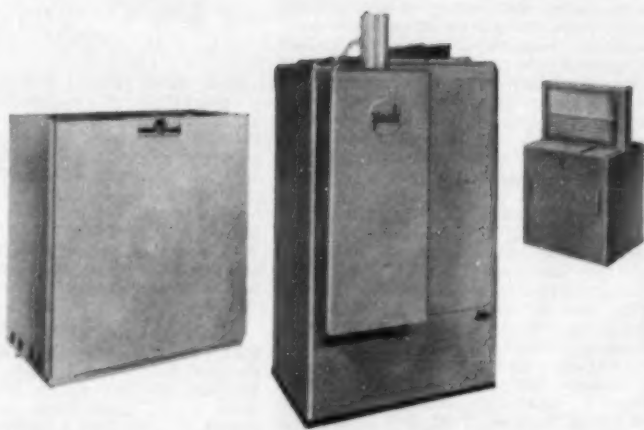
Arendt Is Sales Mgr.

CHICAGO—Erwin J. Arendt has been appointed sales manager of appliances for the RCA Victor Distributing Corp. in Chicago, it was announced by N. A. Corbett, vice president of the distributing organization.

HOME AIR CONDITIONING DEALERS WANTED!

A leading national magazine reports that 130,000 central units were installed in U. S. homes last year, an increase of 68.5% in one year! This year the sale of home air conditioning is expected to jump to 160,000 units or higher. *There just aren't enough qualified dealers to install that many units!*

CUT YOURSELF IN ON BIG PROFITS WITH YORK'S NEW TRAINING PROGRAM!

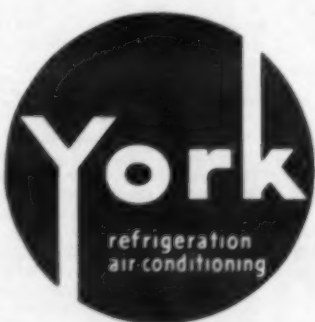


Only York, with over 70 years in the cooling field, could bring you such a course! It's designed to get you into the rich residential field *fast*, and to help you get more out of it once you're in. You'll be taught by top-notch factory-trained experts—men who really know air conditioning.

Don't miss this chance to get in on the ground floor of a booming new industry! Call your nearby York Distributor, or mail the coupon today!

York gives you more . . . more training, more quality, more models, more profits!

- York Home Air Conditioners are engineered and factory-assembled for quick, easy installation. Electrical controls pre-wired at the factory.
- Each cooling system *hermetically sealed*. No belts, pulleys or gaskets. No field charging or tubes to run. Oil and Freon sealed in. Your profits don't go down the drain in costly service calls!
- Simple *capillary tube feed* controls flow of refrigerant. No summer-winter changeovers. Nothing to wear out. No tricky expansion valves to get out of order.
- There's a York Air Conditioner for every need . . . waterless and water-cooled, "add on," year-round, gas or oil-fired, remote systems, handsome packaged units. Across the board, York gives you *more*!



the quality
name
with the
quantity profits

Manager of Sales, Commercial Division, Dept. AC-6
York Corporation, York, Pa.

Tell me how York's new training program unlocks the door to big profits in home air conditioning.

Name _____

Company _____

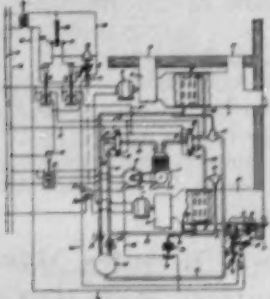
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City _____ Zone _____ State _____

PATENTS

Week of December 27

2,728,197. DEFROSTING CONTROL FOR REFRIGERATING SYSTEM. Francis R. Ellenberger, Verona, N. J., assignor to General Electric Co., a corporation of New York. Application Sept. 18, 1953, Serial No. 310,308.

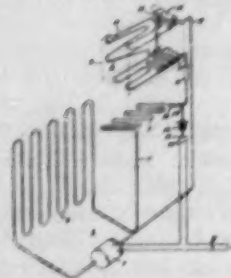


1 A refrigerating machine including a cooling unit, means for circulating over said unit air to be cooled, means for operating said machine to cool said unit below the freezing point of water whereby frost tends to collect on the surface of said unit, duct means providing a by-pass around said unit whereby an increased rate of flow of air occurs through said by-pass upon restriction of the path of flow through said unit the accumulation of frost thereon a moveable vane in said by-pass in the path of the air flowing there-through, means for biasing said vane to a position toward the inlet of said by-pass, means dependent upon movement of said vane away from said position for effecting the defrosting of said unit, means responsive to the temperature of the refrigerant in said cooling unit to terminate the defrosting operation, and damper means in said by-pass for varying the effective inlet area of said by-pass for determining the degree of frosting of said coil required to actuate said vane.

2,728,198. PLURAL TEMPERATURE REFRIGERATING SYSTEM. Frank A. Schumacher, Erie, Pa., assignor to General Electric Co., a corporation of New York. Application Dec. 12, 1952, Serial No. 325,634.

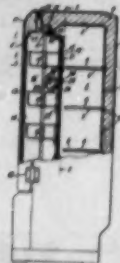
1 A refrigerating system comprising a condensing unit, a high temperature evaporator and a low temperature evaporator connected in series refrigerating circuit, control means dependent on a condition of said high tem-

perature evaporator for starting said condensing unit at a high pressure in said high temperature evaporator and stopping said condensing unit at a low pressure in said high temperature eva-



porator, a vaporizable refrigerant in said system, means in said circuit between said evaporators for maintaining a predetermined normal pressure differential between said evaporators, an ice freezing section, in said circuit between said differential means and said low temperature evaporator, said section being arranged for receiving in heat exchange relationship therewith trays of water to be frozen, and means for automatically increasing the pressure differential between said evaporators when an ice freezing load is imposed on said section, said means including a restricted conduit in said circuit between said freezing section and said low temperature evaporator which decreases the flow of refrigerant to said low temperature evaporator upon increased vaporization of refrigerant in said section under ice freezing load thereby increasing the pressure of said high temperature evaporator and increasing the running time of said unit.

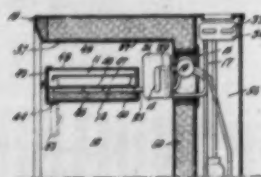
2,728,199. SECONDARY SYSTEM FOR FRESH FOOD DOOR COMPARTMENT. MENT. Lowell M. Kartz, Erie, Pa., assignor to General Electric Co., a corporation of New York. Application Aug. 5, 1952, Serial No. 302,697, 7 Claims. (Cl. 62-6.)



1 A refrigerating apparatus comprising a cabinet, an access opening to said cabinet, a door closing said access

opening, an insulating member dividing said cabinet into a fresh food compartment and a freezing compartment, said member and said door cooperating to form said fresh food compartment therebetween, means for cooling said freezing compartment, and a secondary refrigerating system including a condenser portion and an evaporator portion, said condenser portion being mounted on the upper portion of said member and disposed in said freezing compartment and primarily cooled by the ambient air in said freezing compartment, said evaporator portion being mounted on the major and lower portion of said member and disposed in said fresh food compartment in heat exchange relationship with the air in said fresh food compartment, said evaporator portion cooling only the lower portion of said fresh food compartment, the upper portion of said fresh food compartment being cooled by heat leakage through said member to said freezing compartment and operating at a temperature higher than that in said lower portion of said fresh food compartment.

2,728,201. ABSORPTION REFRIGERATOR OF THE INERT GAS TYPE. Gunnar Axel Grubb, Bromma, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden, a corporation of Sweden. Application Oct. 20, 1951, Serial No. 252,312. Claims priority, application Sweden Oct. 25, 1950. 5 Claims. (Cl. 62-95.)



1 A refrigerator including a cabinet having an inner liner defining a thermally insulated storage space having a ceiling and an absorption refrigeration system associated therewith having a circuit for inert gas including piping in said storage space forming low and higher temperature evaporator sections in which refrigerant fluid evaporates in the presence of the gas, a freezer unit in the storage space comprising wall means including a horizontal plate to provide a compartment substantially segregated from the remainder of the storage space to restrict circulation of air therebetween, substantially all of the piping of said low temperature evaporator section being disposed essentially in a single horizontal plane, the piping of said low temperature evaporator section being in thermal exchange relation with said plate which provides a supporting surface for matter to be refrigerated, an air cooling unit in the storage space comprising means providing a relatively extensive heat transfer surface, the piping of said higher temperature evaporator section being in thermal exchange relation with said heat transfer surface and including a horizontally extending portion which is nearer to the ceiling of said storage space than the piping of said low temperature evaporator section disposed in said single horizontal plane, means for conducting liquid refrigerant to said higher temperature evaporator section for gravity flow therethrough and from the latter to said low temperature evaporator section for gravity flow therethrough, said freezer unit and a vertical wall of said inner liner having a gap therebetween in which said air-cooling unit is disposed alongside of said freezer unit with the latter in the vertical direction having a major portion of its height coextensive with that of said air-cooling unit, and means including opposing vertically extending impermeable wall sections of said freezer unit and inner liner at the immediate vicinity of said gap to provide a vertically extending passage which is always open and completely unobstructed at the top and bottom ends thereof for flowing air in said space in thermal exchange relation with said air-cooling unit, said passage extending for a major portion of the vertical height of said air-cooling unit.

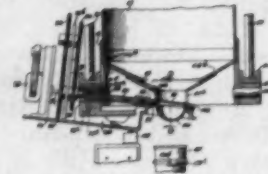
2,728,203. REFRIGERATOR HAVING A FREEZER COMPARTMENT IN THE DOOR. Ralph E. King, Erie, Pa., assignor to General Electric Co., a corporation of New York. Application March 22, 1954, Serial No. 417,640. 4 Claims. (Cl. 62-102.)



1 In a refrigerator having a cabinet providing a food storage compartment, a door providing access to said compartment, a chamber formed in said cabinet above said storage compartment, said door having a com-

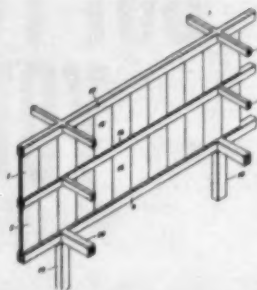
partment formed therein, a second door disposed in said first door to provide access to said second compartment, an evaporator disposed in said chamber adjacent said storage compartment to maintain said storage compartment at above freezing temperatures, means providing communication between said second compartment and said chamber, a second evaporator disposed in said chamber, and fan means to circulate air over said second evaporator into said second compartment to maintain said second compartment at sub-freezing temperatures so that said second compartment will function as a freezer compartment.

2,728,204. METHOD FOR DISPENSING FROZEN CONFECTIONS AND APPARATUS FOR USE IN SAME. Robert G. Tarr, Villa Park, Ill. Application March 12, 1949, Serial No. 51,130. 6 Claims. (Cl. 107-8.)



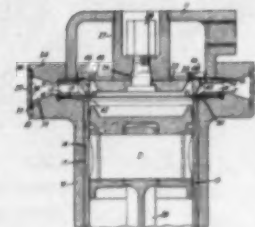
1 In an apparatus for automatically forming a delivering balls of ice cream from a container the combination of an ice cream container having and opening in one end thereof, a substantially hemispherical cup for forming a ball of ice cream, carriage means for said cup including a horizontally disposed shaft pivoted intermediate its ends for rocking movement between normal horizontal position and tilted position, means mounting the cup on one end of said shaft with the cup portion in registry with the opening when in normal position, means for causing ice cream to extrude through said opening into said cup and cause tilting movement of said supporting shaft responsive to the forces of ice cream upon filling said cup, and switch means positioned operatively to be engaged by said shaft in response to movement of said shaft to tilted position for rendering said ice cream extruding means ineffective.

2,728,265. WATER-COOLING TOWER. Charles Henry Richards, London, England, assignor to L. G. Mouchel & Partners, Ltd., London, England, a company of Great Britain and Northern Ireland. Application April 30, 1953, Serial No. 352,113. Claims priority, application Great Britain. Dec. 2, 1952, 6 Claims. (Cl. 261-108.)



5 A water cooling tower comprising a plurality of horizontally spaced panel members having apertures therein and drip bars extending between adjacent pairs of such panel members and having their ends extending into said apertures, the said panel members having reinforcements and being disposed in the tower with their reinforcements at an angle to the vertical, and having their ends cast in with horizontal supporting beams.

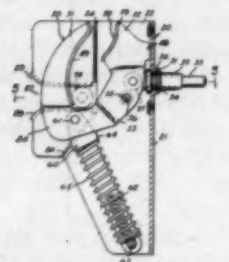
2,728,351. GAS COMPRESSOR AND VALVE THEREFOR. Kenneth K. Cooper, Fort Wayne, Ind., assignor to General Electric Co., a corporation of New York. Application May 14, 1952, Serial No. 287,747. 1 Claim. (Cl. 137-516.15.)



A discharge valve assembly for use in compressors and the like comprising a valve member having a flat face, said valve member having porting means providing an annular porting zone in said flat face of said member for the passage of gas through said valve member, a valve for controlling said porting means comprising a thin flat ring of flexible metal engaging said flat face of said member and mounted concentrically with said porting zone and having a continuous portion near its inner periphery covering said porting zone and a scalloped outer circumferential edge portion, and means providing a conical backing member for said valve ring extending from the outer periphery of said ring toward the center thereof and axially

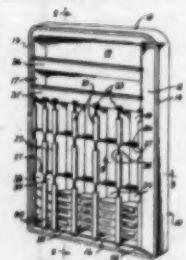
away from said flat face, said backing member having openings therein registering with the scallops in the outer edge portion of said valve ring and affording passages for discharge gas, said backing member at its portion nearest the outer rim of said ring being spaced from said valve seat a distance slightly greater than the thickness of said valve ring whereby the outer scalloped edge portion of said ring is restrained against movement away from said face but is freely mounted to afford flexing of its inner portions about its outer rim and conically toward said backing member.

2,728,596. REFRIGERATOR LATCH. George E. Curtiss, Jr., and Louis G. Bobrowski, New Britain, Conn., assignors to The Stanley Works, New Britain, Conn., a corporation of Connecticut. Application Nov. 8, 1951, Serial No. 255,394. 2 Claims. (Cl. 292-332.)



1 A latch mechanism adapted to engage a keeper, comprising a frame having a keeper-receiving guideway therein, a C-shaped bolt having a latching finger portion and a positioning finger portion, a pivot for supporting the bolt in the frame for limited pivoting movement in either direction between a cocked and a latching position, said pivot being offset from the center of said bolt towards said positioning finger portion and being in alignment with the longitudinal centerline of said guideway, a spring engaging the bolt at a point spaced from the pivot and towards said latching finger portion to urge said bolt in either direction, means on said positioning finger portion to engage the keeper when the bolt is in cocked position, the point of said engagement being above the longitudinal centerline of said guideway to initiate movement of the bolt to latching position, and an inwardly facing cam surface on said latching finger portion for engagement behind the keeper as the bolt is pivoted to latching position in which position the point of engagement of the bolt and keeper is in alignment with the longitudinal centerline of the guideway and the bolt pivot.

2,728,623. INNER DOOR BINS FOR UPRIGHT FREEZER. George C. Forstner, Amama, Iowa, assignor to Amama Refrigeration, Inc., Amama, Iowa, a corporation of Iowa. Application Sept. 27, 1952, Serial No. 311,854. 4 Claims. (Cl. 312-236.)



4 In an upright freezer, a vertical door having a plurality of bins for frozen food packages on the inner surface thereof, said bins comprising a plurality of vertical spacers each consisting of a divider flange perpendicular to the inner wall of the door and separated therefrom, at least one retaining flange extending perpendicular to the dividing flange and partially overhanging the space between adjacent divider flanges, a plurality of horizontal shelves in vertical spaced relation for supporting said packages and vertical integral ribs on said inner surface for maintaining said packages away from said door whereby air circulates under said packages and between said door and said packages.

DESIGNS

176,464. PAN BLADE. Arthur E. Kline and Wendell H. Webster, Albion, Mich., assignors, by mesne assignments, to McGraw Electric Co., a corporation of Delaware. Application April 6, 1953, Serial No. 24,363. Term of patent 14 years. (Cl. D26-7.)



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FOR SALE: 1-6 1/2 x 6 1/2 Vilter machine, serial #A-431381 and one 9 x 9 York compressor, serial #28980. Both machines complete with electric motors. 220 volt, 3 phase, 60 cycle. 1-Sundh Electric Panel Board with starters and controls; 1-temperature recorder; 1-brine circulating pump; 4-1 1/4 x 2" double pipe condensers. Both machines are now in operation and can be inspected. Will sell together or separately. **FIVE TOWNS REFRIGERATION CO., INC.**, 3 Lawson Avenue, East Rockaway, L. I. New York.

NEW SELF contained Kosco automatic condensate water disposal pumps for air conditioners ice cube bins; at your local wholesaler. Available in 10 and 20 foot heads.

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NEWARK, N. J. Tesco Distributors, 78 Boston Street

DAYTON, OHIO. W. H. Kiefhaber Co., Refrigeration Dept.
SACRAMENTO, CALIF. Associated Refrigeration, 1717 Eye Street

SEATTLE, WASH. Refrigerative Supply, 204 W. Republican
TAMPA, FLORIDA. Leo S. Bosage Co., 1546 Franklin Street

HIGHLAND PARK, MICH. J. M. Ober, Inc., 55 Oakman Blvd.
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FOR SALE at prices considerably under cost: Refrigerated display cases, coils, compressors, fittings, valves, controls, electrical components, refrigeration service parts of all kinds. Inventory disposal of major manufacturer. Send for lists and prices to BOX A5549, Air Conditioning & Refrigeration News.

MISCELLANEOUS

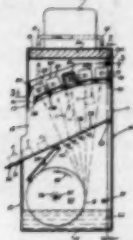
ATTENTION SERVICEMEN: Send for free circulars and bulletins on refrigeration parts and equipment. Real money saving values: **WALTER W. STARR**; 2833 Lincoln Avenue, Chicago 13, Illinois.

For more information about products advertised on this page use Information Center, page 26.

PATENTS

Week of January 3

2,729,070. ICE CUBE MACHINE. Ward A. Ames, Faribault, Minn. Application June 28, 1952, Serial No. 256,129. 10 Claims. (Cl. 62-107.)



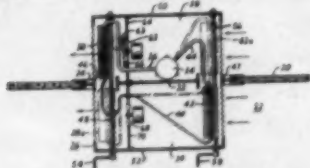
1. An ice cube machine comprising in combination a tank having a front wall provided with an aperture therein and a rear wall for retaining a supply of liquid at the bottom thereof, a plurality of discs having portions rotatable progressively into and out of contact with said liquid, a plurality of inverted cups centered above each of said discs and positioned thereof for receiving liquid tangentially thrown from said disc, said cups each comprising an inner and outer shell and being connected together for the flow of refrigerant between said inner and outer shell, refrigeration means for causing a flow of refrigerant to flow through said inner and outer shells, means between said discs and said cups for receiving ice cubes which are ejected from said cups, said means being inclined from said rear wall to said front wall to guide ice cubes thereout, and said front wall above said aperture being parallel to but spaced towards said rear wall from said front wall below said aperture.

2,729,071. TWO FLUID REFRIGERATION SYSTEM. Lyman P. Whitney, Boston, Mass., assignor, by means assignments, to Stator Co., a corporation of Massachusetts. Original application Oct. 4, 1949, Serial No. 119,489, now Patent No. 2,678,548.



1. Refrigerating apparatus comprising a compartment having a housing formed with spaced inner and outer top and side walls providing an enclosure, a primary liquid refrigerant disposed within said enclosure so as to provide a liquid-vapor interface in heat transfer relation to the interior of said compartment between its upper and lower parts, a second enclosure formed with spaced inner and outer side walls, the side walls of one enclosure being disposed in close thermal contact with the side walls of the other enclosure so that the upper part of the second enclosure is in heat transfer relation to at least a part of said liquid-vapor interface, and a secondary refrigerant within said second enclosure said secondary refrigerant having a vapor pressure greater than that of the primary refrigerant and adapted to reflux in response to a temperature differential between said liquid-vapor interface and the lower part of said second enclosure, thereby transferring heat from the latter to said interface.

2,729,072. REFRIGERATING APPARATUS HAVING REHEATING MEANS. Edwin S. Dybvig, Dayton, Ohio, assignor to General Motors Corp.

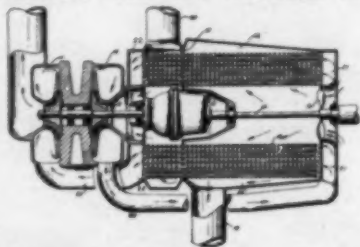


1. Air conditioning apparatus for an enclosure including a condenser element, an evaporator element, one of said elements being movably mounted upon said apparatus for movement into and out of heat exchange relation with said enclosure, a refrigerant compressor fixed within the apparatus, and operative refrigerant flow connections between said elements and said compressor, the refrigerant flow connection between said movably mounted element and the compressor and the refrigerant flow connection between said movably mounted element and the other element being flexible refrigerant flow connections.

2,729,073. AIR EXPANSION REFRIGERATION SYSTEM. Edwin A. Nielsen, Dearborn, and Charles C. Hill, Oak Park, Mich., assignors to Ford Motor Co., Dearborn, Mich., a corporation of Delaware. Application July 27, 1953, Serial No. 370,508. 3 Claims. (Cl. 62-126.)

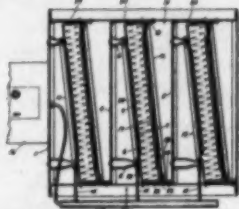
1. A vehicular air conditioning apparatus comprising an inlet conduit lead-

ing from the space to be conditioned, an outlet conduit leading to the space to be conditioned, a cooling fan, a speed changer, a radial flow centrifugal compressor, a radial flow centrifugal ex-



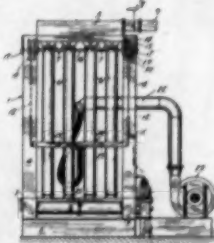
pander and an annular heat exchanger, said cooling fan, compressor, expander and heat exchanger being arranged concentrically, a bulkhead dividing said heat exchanger into a first and second section, said first section being cooled by ambient air circulated by the cooling fan and said second section being connected to said inlet conduit and cooled by air recirculated through this conduit from the space to be cooled, and said centrifugal expander discharging expanded and cooled air into the outlet conduit and hence to the space to be cooled.

2,729,302. ELECTROSTATIC FILTER. Ronald G. True, Louisville, Ky., assignor to American Air Filter Co., Inc., Louisville, Ky., a corporation of Delaware. Application Feb. 11, 1949, Serial No. 75,885. 20 Claims. (Cl. 183-7.)



1. An electrostatic filter comprising: an air flow housing having an air cleaning chamber adapted to receive a dielectric filter cell in position to clean the air passing through the chamber; a pair of electrostatic cell-charging grids of opposite electrical sign arranged within said chamber, one on each side of the space provided for said cell; means mounting said grids on said housing for movement relatively toward and away from each other to grip and release a cell arranged between them, said mounting means including means for electrically insulating one grid from the other; and means for connecting the grids to an electrical supply line to impose a difference of electrical potential between them.

2,729,304. CLEANING DEVICE FOR AIR FILTERS. Arden E. Swanson, Minneapolis, Minn., assignor to The Day Co., Minneapolis, Minn., a corporation of Minnesota. Application Dec. 28, 1953, Serial No. 400,455. 8 Claims. (Cl. 183-61.)

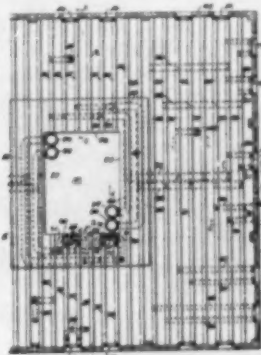


1. A cleaning device for tubular air filters of the type comprising a tube of flexible porous material, an inlet at one end of said tube for dust laden air, an outlet at the other end of said tube for discharge of material filtered out of the air escaping outwardly through the interstices of the wall of said tube, and means for delivering dust laden air under relatively low pressure to the inlet; said cleaning device including a cleaning head having a discharge opening adapted to engage said tube, means mounting said cleaning head for reciprocatory movements axially of the tube, power operated mechanism for imparting said reciprocatory movement to the cleaning head, said power operated mechanism including a motor, and control means operative to cause said motor to move the cleaning head at relatively high speed in the direction of its reciprocatory movement toward said inlet and at relatively low speed in the opposite direction, said control means including motor reversing control elements adjacent opposite ends of said tube and alternately engaging said cleaning device at its limit of movement in one direction to cause movement of the cleaning device in the opposite direction, and speed control elements governing the speed of said motor in opposite directions.

2,729,429. AIR CONDITIONING AND DISTRIBUTING SYSTEM AND APPARATUS. Richard P. Goemann, Fort Washington, N. Y., assignor to H. H. Robertson Co., Pittsburgh, Pa., a corporation of Pennsylvania. Application Feb. 24, 1954, Serial No. 412,217. 25 Claims. (Cl. 257-4.)

1. In a multi-story building and air conditioning structure, means forming a vertical service core in said building;

spaced horizontal floor supporting beams disposed about said core forming the stories of said building; metallic cellular load supporting floors erected directly upon said beams and including cells defining passages for air flow therethrough and extending



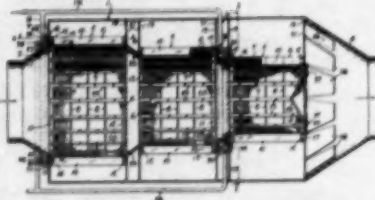
transversely of said beams; two vertical air supply ducts in said service core through which air streams of different condition flow; means forming a passageway in said building between adjacent stories along a portion of said core; means extending along said passageway and connected to said air supply ducts and constituting separate headers for the distribution of the two air streams of different condition from said air supply ducts; means connecting said headers to selected floor cells for introducing said differently conditioned air streams into different floor cells; outlet means from said different floor cells communicating with portions of the building outwardly of said passageway; and means for mixing said differently conditioned air streams prior to discharge from said outlet means to the portions of the building to be conditioned.

2,729,431. AIR CONDITIONING AND SOUND DEADENING CHILLING INSTALLATION. George P. Little, Shaker Heights, Ohio, assignor to The George P. Little Co., Inc., Cleveland, Ohio, a corporation of Ohio. Application Nov. 17, 1951, Serial No. 256,925. 1 Claim. (Cl. 257-124.)



A series of parallel horizontal metal pipes at the ceiling of a room through which heating or cooling fluid may be circulated, a metallic rail depending from each of said pipes, each of said rails having a vertical web and base flanges extending laterally on each side of the web, each rail comprising an integral open arcuate hook portion above its web hung over and contacting the corresponding pipe, and a plurality of metal pans supported upon the facing side flanges of adjacent rails, each of said hook portions conforming in cross section to an arc of a circle of greater diameter than the diameter of the pipe on which it hangs, and the center of gravity of the supported rail lying substantially in said web, whereby fluid at a temperature other than room temperature when circulated through said pipes transfers heat to or from said pans because of the contact between the pipes and the rails and between the base flanges of the rails and the pans, and whereby a rail may be tilted upon its pipe to permit a pan to be removed and a new one to be installed.

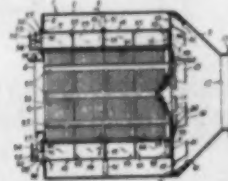
2,729,432. LARGE CAPACITY HEAT EXCHANGER. William P. Berg, Elmhurst, N. Y., assignor to A. O. Smith Corp., Milwaukee, Wis., a corporation of New York. Application Sept. 17, 1952, Serial No. 310,075. 14 Claims. (Cl. 257-137.)



1. A heat transfer apparatus for controlling the temperature of substantially large volume of fluid passing therethrough, which comprises a longitudinally extending duct having an inlet and outlet end, a series of annular heat transfer banks disposed axially of each other within said duct and having a longitudinal central passage therethrough, said banks being spaced radially inwardly of the duct to provide an outer passage between the banks and the duct, each said bank comprising a plurality of independently removable longitudinally disposed core sections arranged in a substantially circular shape to form each annular bank with said core sections defining separate flow paths for a fluid and a heat transfer medium, means to introduce fluid into the central passage of said duct and to flow a portion of the fluid axially through the central passage of the banks and to flow another portion of said fluid radially through the core sections of each of said banks to said outer passage and thence longitudinally of the duct

to said outlet, and means to supply a heat transfer medium to each core section and to withdraw the same from said core section.

2,729,433. HEAT EXCHANGER WITH REMOVABLE TUBE BANKS. William P. Berg, Elmhurst, N. Y., assignor to A. O. Smith Corp., Milwaukee, Wis., a corporation of New York.



1. A heat transfer apparatus comprising a generally cylindrical casing having a centrally disposed fluid inlet opening at one end and a centrally disposed fluid outlet opening at the other end, an annular member secured at its periphery to said casing and located adjacent said outlet opening, an inner set of circumferentially spaced openings disposed in said annular member to provide for passage of untreated fluid through said member, an outer set of circumferentially spaced openings disposed outwardly from the first set to provide for passage of treated fluid through said annular member, closure means pivoted to said annular member adjacent both said first and said second spaced openings to permit opening and closing of said openings and thereby control the flow of treated and untreated fluid through the outlet and the temperature of the fluid discharged from the apparatus, a pair of longitudinally spaced spider plates assembled with said casing, longitudinally extending frame members of generally rectangular shape assembled annularly and secured at their respective ends to said spider plates to provide a plurality of independent frame members spaced annularly about the inside of said casing and removed inwardly from the casing wall to provide a longitudinal passage between the casing and frames extending the length of the casing to the outer set of spaced openings, the exit end of each frame member being secured to said annular member and the entry end of each frame being secured to the entry end of the casing, means to seal off the longitudinal passage at the entry end of the casing, heat exchange core units removably disposed in each frame and with each unit being independent of the other units, baffle means extending centrally from said annular member and toward the inlet opening to direct a portion of the fluid entering the casing radially across said units, and a longitudinally extending strip secured to the inner portion of adjacent frame members and extending between said adjacent frame members to seal off the passage of fluid between the core units and effectively direct the fluid across the core units.

(To Be Continued)



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Ace Cabinet--

(Concluded from Page 1, Col. 2)

and comptroller, respectively.

In announcing the acquisition, Levine, Ace Cabinet's new chief executive officer, expressed great optimism for the future development of the company.

"Consolidated American Industries' policy has been to buy companies in diversified industries," he said. "By providing new capital and management assistance, Consolidated has helped such companies grow in stature and stability much faster than they could have managed on their own."

The new Ace Cabinet president said that, although sales last year were around 1½ million dollars, Ace has experienced financial and other difficulties.

"Many industries have moved out of the New Bedford area in the past few years," he pointed out. "This has tended to slow down the regions entire economy, and Ace Cabinet, like most other companies that have remained, has felt the effects of this slowdown on work. We find ourselves in need of the kind of help Consolidated American can give."

Ace Cabinet Corp. manufactures refrigerated cases, refrigerated display cabinets, and laundry driers. It has been in business in New Bedford since 1936, has offices and representatives in key cities throughout the country and manufactures its equipment in a plant occupying over 100,000 sq. ft. of space.

Consolidated American is a publicly owned corporation and works on a policy of acquiring and then building up companies in widely diversified industries.

Besides Ace, it owns Sanders Mfg. Co., Tulsa, makers of ordnance, guided missiles and aircraft components; American Railway Salvage Systems, Dallas, a large volume merchandiser of consumer and industrial goods; The Coastal Co., Houston, a large discount house; and the Atlas Insurance Co., an Alabama organization underwriting automobile, fire and casualty insurance.

In addition, Consolidated owns sulphur and oil properties in Central America and Mexico.

Chicago Marts--

(Concluded from Page 1, Col. 3)

new home goods tenants and relocations within the building of long established tenants.

New appliance tenants in The Merchandise Mart include Gibson Refrigerator Co., Div. of Hupp Corp., in 11-102; Lewyt Mfg. Corp., in 1174; Crown Stove Works, Inc., in 1176; and Siegler Corp., in 360.

Ben-Hur Mfg. Co. and Ironrite, Inc. will exhibit for the market in 11-113 and 11-114, respectively. Additional space has been taken by McGraw Electric Co. for its Lonergan Mfg. Div. in 1468.

Ollman also announced that General Electric Co.'s recent division realignment has resulted in Mart showroom changes. The G-E Appliance & TV Receiver Div. is located in 1117 and the Housewares and Radio Receiver Div. in 1123.

2 New Westinghouse Refrigerators To Spearhead Summer Program

MANSFIELD, Ohio — Two new refrigerators — one a "Stoop-Saver" model with refrigerator section up-top and the freezer below and a two-door completely automatic defrosting model — have been introduced by Westinghouse to spearhead the June-July selling.

According to S. J. Stephenson, manager of the refrigerator-freezer department for Westinghouse, the new models are presently in production at the firm's appliance plant in Columbus, Ohio, and will be available in dealers' stores throughout the country in June.

Suggested list prices for the new models are \$449.95 for the Stoop-Saver model and \$479.95 for the two-door model.

The new Stoop-Saver model

(SBJ-114) has 9 cu. ft. of storage capacity in the up-top food compartment and nearly 2½ cu. ft. in the freezer for a total of 11.4 cu. ft. of storage space.

The food compartment has three full width shelves. A full-width bottle shelf adjusts up or down "permitting bottles of any height to be stored with ease." There are large-capacity "Humidrawers" in the bottom of the food compartment.

Four shelves are provided in the door. An egg keeper located here will store over a dozen eggs, a butter chest stores butter or margarine at spreading temperature, and three full-width shelves hold most kinds of bottles, jars, or cartons.

"To rid the homemaker of the worry of defrosting the food

compartment, this model is equipped with 'Automatic Cycle Defrosting' which is completely automatic even to the disposal of the defrost water," the company said. "The 'Cold-In-Motion' refrigeration system constantly circulates cold from top to bottom of the refrigerator section to keep foods uniformly cold.

The freezer will store up to 83 lbs. of frozen food. Its basket rolls out for convenient loading and unloading. "Hand-Out" ice cube trays are provided.

The new two-door model (TFJ-115) has completely automatic defrosting in the food compartment and in the freezer, the company said, adding: "Frost is removed from the evaporator during the defrosting cycle so quickly that foods stay solidly frozen."

Refrigerated on all five sides "to assure fast freezing and zero-zone storage," the separate

freezer stores up to 73 lbs. of frozen food. In addition, there is more storage space in the door shelf for frozen juice concentrate and other cans of similar size.

For storage in the main food compartment, the TFJ-115 provides three full-width and one half-width shelves. Other features are a full-width Humidrawer which "provides moist cold for keeping ⅔ bushel of vegetables crisp and fresh," and a white porcelain enamel meat keeper for storage of up to 18 lbs. of fresh meat.

In the door, shelves provide storage for bottles, jars, and cartons. An egg shelf holds 14 eggs.

G. W. Weikel Dies at 76

LOUISVILLE, Ky. — George W. Weikel, a co-founder of the S. W. H. Supply Co., a refrigeration wholesale supply firm, died here on May 27 at the age of 76. He retired six years ago.



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